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ROYAL ASIATIC SOCIETY

[No. 60]

JOURNAL

December, 1911.

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Agents of the Society

London: Kegan Paul, Trench, Trübner & Co.

PRINTED AT THE METHODIST PUBLISHING HOUSE SINGAPORE.

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Obituary.

The Society much regrets to have to record the death of one of their most valued and promiment members, the Hon'ble Warren D. Barnes, Colonial Secretary of Hongkong, which took place in Hongkong on October 28th of this year (1911).

Mr. Barnes, born in 1865, was educated at King's College School and Pembroke College Cambridge. He joined the S. S. Government service in 1888, held various appointments, chiefly in connection with the Chinese Protectorates in this Colony and the F. M. S., became Secretary for Chinese Affairs for the S. S. and F. M. S. in 1904, Resident of Pahang in 1910, and then left here early this year on his appointment as Colonial Secretary in Hongkong.

Mr. Barnes was elected a member of the Society in 1893 when he was still in Penang, and his chief activity in connection with it was during the years 1908 and 1909 when he was Vice-President for Singapore, and in 1910, as Vice-President for the F. M. S. It was due to his initiative and supervision that a Catalogue of the Society's Library was compiled and printed in 1909, and he also undertook the laborious task of compiling a most useful index volume to the Society's Journal Nos. 1-50.

His own contributions to former Nos. of the Journal are:

A Trip to Gunong Benom, Pahang, No. XXXIX, pp. 1-10

Schmidt's Sakai and Semang Languages, No. XXXIX, pp. 38-45

Kern's Sanskrit Inscriptions, Malay Peninsula, No. XLIX, pp. 95-101.

His three papers in the present Journal, viz.

"Singapore Old Straits and New Harbour"

"An Old Royal Cemetery at Pekan in Pahang," and

"An Old Tombstone in Pahang"

were printed off some weeks before his death.

R. HANITSCH,

Actg. Hon. Secretary.

Barretto de Resende's Account of Malacca.

By W. George Maxwell.

Manuscript No. 197 of the Sloane collection of manuscripts in the British Museum is Barretto de Resende's "Livro do Estado da India Oriental." The manuscript, which has not yet been published or translated, is divided into three parts. The first contains portraits of all the Portuguese Viceroys from Franciso de Almeyda, the first Viceroy, to Dom Miguel de Noronha, the 44th, in A.D. 1634, with an account of the Government of each Viceroy.

The second part contains "the plans of the fortresses from the "Cape of Good Hope to the fort Chaul, with a detailed "description of all that is to be found in the said fortresses, "the receipts and expenses of each and everything that concerns "them." In this part are a plan and description of the fortress of Sofala, a map and description of the rivers of Cuama, a description of the Islands of Angoxa; plans and descriptions of the fortresses of Mozambique, Mombassa, Curiate,* Mascate, Matara, Sibo,§ Borca,§ Soar, Quelba,§ Corfacam, Libidia, Mada§, Dubo-doba and Mocomlim; a plan of the fortress of Ormus,* a description of the Congo; plans and descriptions of Bassora*, and the Island of Baren; descriptions of Sinde* and the "Kingdom of Cacha and Magana;" plans and descriptions of the fortress of Dio, Suratte, Damas, Samgens, Danu, Trapor, Maim, Agassym, Manora, Mount Aserim and Bassaym; descriptions of the Fort of Saybana, the Fort of Corangangens, Tana and its bastions, Mombayon and Caranya, and plans and descriptions of the mole of Chaul and of Chaul.*

The third part of the book contains "the plans of all the "fortresses from Goa to China with a similar description and "contains also plans of other fortresses not belonging to the "State, they being included as being situated on these coasts and "being of interest." In this part are plans and descriptions of "the lands and forts of Bardes", Goa, Rachol, Salsete, Onor, Cambolim, Barselor, Mangallor, Cananor, Cunhalle and Cranganor; a description of Balliporto; plans and descriptions of Cochim, Conlam, Negapatam, San Thome, "the Dutch town of Palleacate", Pulikat and the Island and Fortress of Manar; a plan of the island of Ceylon; plans and descriptions of the fortress of Jafnapatam, Colombo, Calleture, Negumbo, Gualle, Batecalou and Triquilimale;

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* The accounts of these places will be found (in Portuguese) in the appendix to the fourth volume of the Hakluyt Society's Commentaries of Afonso Dalboquerque.

§ Notes on the plans of these fortresses state that they were demolished and abandoned as being of no use after the book was written.

a plan of the Maldive Islands; a plan and description of the fortress of Malacca; plans of the isle and fort of Achem, "the Dutch fortress of Jacatra" (the site of the present city of Batavia), the Malucco Islands and the Banda Islands; plans and descriptions of the Solor Islands and the town of Machao; and plans of the Island of Formosa and the Island and Province of Manilla. It concludes with notes on the size and extent of various islands.

The manuscript, which consists of 412 folios, sets forth on its first page that it was written by "Captain Pedro Barretto de Resende, Professed Knight of the Order of St. Benedict of Avis *, native of Pavia, in the year 1646."

Writing in Kedah, I regret to be unable to obtain any account of de Resende's life.

With two or three exceptions the plans are all coloured, and in addition to them the manuscript contains eight pen and ink charts signed :—

"Petrus Berthelot primum cosmographicum indicorum imperium faciebat anno domini 1635."

Berthelot was born in Honfleur in A.D. 1600. He was for some time a pirate, and then became a barefooted Carmelite monk. He went to Goa, and in 1629 was appointed first pilot to a Portuguese fleet sent to defend Malacca against the attack of the King of Acheen.

He greatly distinguished himself and was given the appointment of Cosmographer Royal of the Indies. After this he made a number of voyages and prepared charts of the coasts he visited.§ He fell in a massacre, in which the Portuguese anbassador was also killed, at Acheen on the 27th November 1638.*

It would appear that the date, A.D. 1646, given by de Resende to his work is that of a year some years after the date of its having been written. The list of viceroys only goes down to 1638. Malacca is written of as a Portuguese possession, whereas it had been surrendered to the Dutch on the 14th January, 1641. There are notes on some of the plans (referred to above) to say that the fortresses of which plans are given had been demolished and abandoned "after the book was written." Lastly Berthelot the cosmographer was murdered in A.D. 1635, or 1638. The probabilities would therefore appear to be that the account of Malacca was written at least before 1638.

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* A military order of Cistercians in Portugal instituted by King Alphonso I, in the middle of the twelfth century, to commemorate the capture of Evora from the Moors.

§ An account of Berthelot will be found in the Manuel de Bibliographie Normande—Vol I p. 336. (Frère, Paris 1850—1860); cited in the commentaries of Afonso Dalboquerque (Hakluyt Society) Vol 2—Introduction page CXXI.

* The date of this Massacre is given in Marsden's History of Sumatra (page 362) as 1635. 1638 is perhaps a misprint in the Hakluyt Society's volume.

Of the plans, charts, and portraits with which Barretto de Resende's manuscript is embellished, six have been reproduced in the Hakluyt Society's edition of the Commentaries of Afonso Dalboquerque. They are:—

The map of Arabia	in Vol: I.	p. 80
The plan of Ormus	,,	p. 112
The portrait of D. Francisco Dalmeida	,, II.	p. 48
The chart of Goa	,,	p. 88
The plan of the fortress of Malacca	,, III.	p. 137
The portrait of Diogo Lopes de Sequeira	,,	p. 254

Gohindo de Eredia's account of Malacca—the *Declaracam de Malaca e India Meridional* dated A.D. 1613, and translated into French by Janssen in A.D. 1882, is the best known Portuguese work on Malacca, and as a comparison of his account and as Resende's account is interesting, give in an appendix a translation of de Eredia's first and fifteenth chapters entitled "Regarding the city of Malaca" and "Regarding Gunoledam" respectively. I have translated them from Janssen's French, and not from the original Portuguese.

Description of the Fortress of Malacca.

folio 383. The fortress of Malacca is situated on the east coast of Juntana[1] between the River Panagim[2] and Muar 2^0 20^1 N. lat.

It was conquered and founded by the great Alfonso de Albuquerque on the 15th of August 1511. At the present day it is a city, containing a fortress, and surrounded by a stone and mortar wall twenty feet high, twelve palms thick at the foot and seven at the top.

It contains six bastions, including the breastwork (couraça), each one called by the name written on it. All the walls have parapets, and each bastion occupies a space of twenty paces and the one named Madre de Deos double that space, so that it can scarcely be defended and covered by the other bastions. The circumference of the whole wall is five hundred and twelve paces, including the space occupied by the bastions. From the bastion de Ospital to that of St. Dominic there is a counterscarp, as also from that of Sanctiago to Madre de Deos, with a ditch in the centre, the whole being fourteen palms wide. The bastions contain forty-one pieces of artillery of twelve to forty-four pounds iron shot. All are of bronze, with the exception of nine iron pieces, and there is sufficient powder and ammunition in His Majesty's magazines for their supply. Twelve of the big pieces lie unmounted on the plain, destined for the fort in process of building on the Ilha das Naos, and some of the remainder are broken.

There are in the town two hundred and fifty married whites[3] who would possess two thousand black captives of different races, all competent to carry arms, of which there is a sufficient supply; as rarely is a married man without his supply of lances, and six, eight or ten muskets or flintlocks, with their ammunition. However of these two hundred and fifty married white men, one hundred live on the other side of the river which gives its name to the land of Malacca.

With regard to the small space within the walls it is almost entirely covered by three convents, that of St. Paul, St. Dominic and St. Augustin; and the aforesaid married couples live in straw huts,[4] so that there is a great risk of fire. There are in this place a number of fruit gardens and orchards of varied fruits. A number of married native Christians live outside Malacca, they are all very good soldiers, and use all kinds of arms, especially muskets, in the use of which they are very skilful. In times of war they are very ready and active: the majority of them seek a means of livelihood. They are so hasty, for very little they will run a man through the belly with a cris, and there is little, if any, cure for the wound, since these weapons, apart from being generally poisoned,[5] are so fashioned, in an undulating shape, as to cause great injury: if the weapon is poisoned, it is only necessary to draw blood to cause death.

folio 383*b*. The fort within this town where the Captain resides is five stories high; the captain lives on the second storey, which is square like the tower, each wall being twenty paces wide. The other apartments are set apart for the Captain's guests, and for storing ammunition. On the first floor four thousand candys[6] of rice were stored, but are no longer there. It is surrounded by a wall of the same height and thickness as that of the town. The Captain's family lives in houses on a level with the second storey of the tower. The only artillery is that of the bastions already referred to. The town receives a duty of one per cent applicable to the works of fortification, of which those of the wall are now being completed.

The king of the interior of that country where the fortress of Malacca is situated is the King of Jor[7] and Pam,[8] a great friend of the Portuguese. He is lord of more than one hundred leagues of coast, but his lands do not extend far inland: at sea he also possesses a chain of islands situated in this vicinity, the majority being inhabited. The people are Malays, and profess the creed of the Moors. They can put twelve thousand men of arms into the field; they fight with artillery, muskets, assegays,[9] saligas,[10] or darts of fire-hardened wood, swords, shields, bows and arrows,[11] crises beforementioned, and sumpitans[12] or very small poisoned arrows, which they blow through tubes, and if they draw blood death will ensue. There is no Christain Settlement in their lands. Up the river beyond Malacca, the married men own many very fertile orchards, with a great variety of fruit, as the land produces very good fruit of many kinds, besides all those to be found in India, and it is remarkable that the town, though nearly below the line, has a salubrious climate[13] and excellent water, the soil being fertile for any seed that is sown: it rains nearly every day and night. The married men of Malacca possess many leagues of land, extending on one side as far as Cape Rachado and on the other to River Fermozo[14] and also many leagues in the interior, but all uninhabited with none to cultivate the land, though it is fertile and would yield much rice. Inland the land borders on that of the Manamcabos,[15] Moors of a land called Rindo,[16] vassals of the King of Pam, and, close by live five or six thousand of the same Manamcabo Moors, vassals of His Majesty, under the Government of a Portuguese married man of Malacca called Tamungam,[17] an office conferred by the Viceroy. To him they owe obedience and should one of these Moors die without heirs, the said Tamungam inherits his property, and if there are heirs he makes an agreement with them and receives ten per cent upon such goods as he thinks fit. At the present day a Portuguese holds the office for life. These Moors cultivate extensive lands by which they maintain themselves. They especially cultivate the betre.[18] They purchase tin[19] from the inhabitants of the interior and bring it to Malacca. The river of this city, and the port of Malacca is of fresh water and is a stone's throw in width. At low tide the bar has a palm and a half of water, and in conjunction with the fresh water there is four fingers of water only, which barely covers the mud which forms the bottom. At high water there is one fathom four palms folio 384. of fresh water and five or six palms of salt. At a little distance from its mouth the river becomes narrower, and is three or four fathoms deep; and in some parts there is always one fathom whether at high or low tide. There are many large carnivorous alligators, for which reason, and because of the mud, it cannot be forded. Along the river and inland there are many orchards belonging both to the married Portuguese and the natives: the men live here with their families cultivating the land to great profit. There are many tigers[20] which before they were exorcised by a bishop were very fierce, but are now less so. All these married men have their weapons. Half a league up the river a log of wood is thrown across the water at night, the chain being padlocked to a sentry-box where stands a Portuguese provided by the city, which pays him six cruzados[21] a month. This is to prevent any forbidden merchandise being smuggled out or in from the large vessels lying at anchor beyond the Ilha das Naos. For the same reason, order has been given to build a fort on the said island, which does not actually face the city, but lies a little lower down at a distance of one thousand five hundred paces from it. The channel in between is small and not navigable to large ships at low tide: the water is very shallow, and the bottom is of mud. Further out to sea, lies another sand-bank, and, between it and the island, is a channel six fathoms deep. The island is nearly the shape of a horseshoe, and is sixty bracas in circumference, its length is one and a half times greater than its width. It contains a mountain four or five bracas in height.

The fort which is being built here, for the foundations are already laid, is small, being thirty paces square. It is to be square, to allow space for the artillery to be separated. Its purpose is to defend the large vessels which cannot lie under the artillery of the fortress. As yet only the foundations are laid; the materials are being gathered together at Malacca so that the whole building may be finished at once, because if it were built gradually it might fall into the hands of the enemy and, once occupied by them, it would be a great danger to Malacca.

The bridge shown in the plan has two abutments, each one being two and a half bracas in height, and the same in length and very narrow, so that there is no danger, as has been suggested, of them affording the means of an attack upon Malacca. The bridge above them is composed of large strong planks, which can be cut down when necessary.

Fifty to sixty soldiers are drawn from the garrison every year to equip a fleet of three, four or five *jaleas*[22] to cruise along the coast. They set sail in May for Pulopinam[23] or whatever place is decided on, to await the ships from Goa, to inform them of the position of the enemy and to assist in discharging the cargo. In September they go to Junsalam[24] to await those from Negapatam, St. Thome and also from Goa; and in December they go to the Straits of Singapore to await those from China and Manila for the same purpose.

The Captain Major receives an allowance of one hundred cruzados, but the soldiers and the captains of the *jaleas* receive nothing whatever beyond their food; but are quite satisfied. The captainship of these *jaleas* is a much sought after and coveted post, because in the many losses caused to our ships, from all parts, by the Dutch, the *jaleas* get the best of the booty: but the worst is that they do not return it to the owners. This applies especially to the ships from China, because of the great value of the salvage, being gold, silks and musk. Neither can it be denied that these *jaleas* save many vessels, and much merchandise; but it is very necessary that they should be in the hands of persons very disinterested and conscientious, a virtue rare among soldiers. The sailors are the chief expense of these *jaleas*, as they carry over fifty, about twenty-three being required to take the oars on either side, besides the two at the helm and stern, the extra men being required to replace those who may fall sick or become fatigued. Each sailor receives one *para*[25] of rice, a little over an *alquerie*,[26] per month, and a cruzado of four hundred and sixty reis the whole time that they are on board. A jalea is the swiftest vessel at sea, being about fifty palms long, and four palms deep, and rowed by forty-six oars. They are of great use in carrying news and relief, and can evade the enemy; so that the more there are the better service

folio 381*b*.

they may render. Other vessels are sent out from Malacca with advices such as *bantims*,[27] very much smaller than *jaleas* the only expense being, as aforesaid, the sailors, and the provisions for the soldiers. The latter, who receive their pay on shore at rare intervals, embark with much good will; because, at times, when they put in at a certain place such as Pera, and other ports, they can earn a quartel[28] from the merchants. They are not discharged from the fortress when they thus go to sea, neither do they lose their pay; but, while away from the fortress, they are masters. But for this no soldier would remain in the fortress for the King's pay is very small and the country very dear. Even as it is, it is a source of wonder that any soldiers are found who will remain there.

One thing may be said of the married women of this land which is greatly to their credit; and that is that there is not one who would ask for any help from her husband towards the expenses of the home, which really is their support; for they themselves supply the household money by making eatables which are usually sold in the streets by their slaves, and their houses take the place of inns in the town. Their daughters are brought up from childhood to the same custom, so that there is no girl who has not her own fortune put aside in this way in her father's house; and thus, as in India, girls are not afraid of their husbands not being able to support them; for this reason too persons of much merit are satisfied with a small dowry. This custom has greater effect in this country than in India.

As regards the merchandise in the fortress of Malacca very little is of the country, and the greater part is imported. The chief products of the country are tin, some bezoar stones,[29] porcupine quills[30] and wild agallochium.[31] A certain quantity of Japam,[32] or red wood, for dyes, of somewhat less value than that of Brazil, is brought from the interior. All the southern commodities and merchandise from China and cloths from Cambay and the Coromandel coast are imported. All the southern tribes were wont to come here to buy in exchange for other merchandise so that the commerce was very extensive, and profits no less; but now it is almost entirely extinct, for never or rarely do any natives come to Malacca to seek anything: having all they require from the Dutch. But nevertheless voyages are still undertaken from Malacca to many parts, China, Manila, and Cochin-China being the principal points of destination and the less important voyages being to Patane. As Siam is now at war, communication with Camboja, Champa and those parts, which would otherwise be very frequent, is interrupted. The ships bear to the South to avoid the windy season which in Malacca is from April to end of August.

The merchandise carried to these places is as follows:—To Patane,[33] stuffs from Cambay and all the Coromandel coast, according to the stuffs in use, as every southern tribe follows a different fashion. From Patane, patacas,[34] some gold, good bezoar stones, rice, meats, vegetables, black cane sugar, oils, all kinds of provisions and the best fowls and capons of all the southern lands.

This kingdom of Patane is governed solely by a woman in accordance with a very ancient custom.[35] It is one hundred and fifty leagues from Malacca along the coast and can be reached without encountering the northern monsoon, more especially if the voyage is made in baloons[36] (which resemble ships of war being wider but not so long, having oars, two masts and two helms called *camudes*)[37] or in Malay galleys (which are smaller than our panchelois,[38] and which are really neither galleys nor baloons, but more closely resemble the latter than the former) and in *bantims* of the size of a *manchua*,[39] which are very swift vessels with oars and masts. The last are the vessels most in use along the coast of Malacca; they are manned by Christian Malays of Malacca, who carry their guns and powder flasks.

The King of Camboja, where there is a church and fathers of the Society, is very friendly to the Portuguese. There is here a quantity of very thick angely wood;[40] and very good benzoin[41] and almond milk[42] and excellent lac[43] are brought in, and a quantity of rice better and cheaper than that of Bengal. The majority of the inhabitants are Japanese and Chinese Christians of bad character who have been expelled from Manila by the Spaniards; and therefore they are the bitterest of our foes. In this kingdom there is an abundance of calambac[44] and agallochium.[31] There are two or three ports on the coast of Champa where the Portuguese go to trade taking black cattle from China and some gold thread, which they exchange for black wood much bigger and better than that of Mozambique. There is here a church and Christian Settlement with a father of the Society.

Beyond lies the kingdom of Cochin China and at the entrance to its port is situated an island where the fathers of the Society have a Christian Settlement. It is called Pullo Cambim. Within the said port, too, the same fathers have a church and a Christian Settlement.

Besides this island there are two ports in this kingdom frequented by the Portuguese for commerce. In one resides the King, and the other is called Turan. The Portuguese had a better welcome here than anyone else and quantities of stuffs are brought here. The contract is however now broken through the violence of the Captain of Malacca and only ships from China go there. Some calambac,[44] an abundance of agallochium,[31] and a quantity of copper is obtained from the said kingdom, it is carried there by Malays and Japanese.

folio 385*b*. The shortest voyages taken from Malacca are those to Pam, a port eighty leagues from Malacca. It belongs to the aforesaid king, who is very friendly to the Portuguese and is lord also of Jor and the maritime islands. Any ships may come to this port from Malacca without hindrance. They bring stuffs and opium in exchange for gold dust[45] of the country and gold coin, bezoar stones, porcupine quills, a quantity of rice, agallochium from the coast, and also some wares which have been brought here by the southern natives who will not go to Malacca. In the same land there are two rivers[46] belonging to the same king, where the Portuguese go to trade in the same merchandise. Facing this place to the sea lies the small mountainous island of Pulo Timo[47] thickly populated by Malays. Pigeons are plentiful, and there is a certain kind of animal called palandos,[48] which resembles a deer and is very good and fat. There are very fine fresh water fish, rivers of excellent water, and an abundance of figs[49] and tar.[50] The anchorage close in to land is in 25 fathoms.

Port Jor lies inland from Point Romania. It is once again becoming inhabited,[51] and many galleys and other vessels are being built there. There is an abundance of provisions, agallochium and tar.

On the other side, in the chain of islands called Bintang, lies the town of Bintang, which is once again inhabited. It is thickly populated, and has many fortifications for fear of Achem. This King of Jor and Pam has other inhabited but unimportant islands in this vicinity.

Here close to the Straits of Singapore, is the port of Bulla, thickly populated with Malays and frequented to excess by numbers of merchants from all the southern tribes, who come here to sell their wares, from which the King of Pam receives great profit. They come here rather than go to Malacca because of the great abuses committed by the captains of that fortress, who buy their merchandise at a price much lower than the current price of the country and also compel them to accept their money: a thing which is very usual in all the towns and fortresses of the Portuguese State; and which causes as much misery as the Dutch themselves. To such an extent is the abuse carried that even when Christians come to these ports of Malacca to trade in certain kinds of merchandise the captain seizes their wares, assessing them at a price below their real value and using much abuse: and for this reason some merchants bring their wares to the customs house at night time in order to pay duty to the customs official in secret. All this is the cause of great losses to Malacca.

On the other side of the island on the coast of Sumatra lies the port of Jambi, on a deep and rapid river, which contains a large body of water. The Dutch are much welcomed here and have a factory and a large trade in pepper. Further on, a little distance from this port, towards Malacca, is the large river Andregy,[51] where the Dutch also procure a quantity of pepper. There are other rivers from which pepper and agallochium are exported, of which no special mention is made because they are unimportant. The port of Siaca,[52] also inhabited by Malays, is close to the Island of Sabam, which is nearer to Malacca. Here at every new and full moon great fairs are held where all the merchandise of the south is sold, gold, precious stones, bezoar stones, agallochium, calambac, provisions and many other things. From this port up a river which empties itself opposite Malacca is the Bay of Bencalis,[53] in Sumatra on the other side of Malacca where a similar fair is held every full moon, where, besides the aforesaid wares, a quantity of fresh and salt pork is sold, and the roe of shad fish, which they call trubo,[54] great quantities of which are exported from Malacca to all ports. Here in the Bay of Bencalis is the river das Galles,[55] all of which is under the dominion of the King of Pam, who has always been Emperor of the South. The Straits of Singapore, before referred to, is the place where the Dutch lie in wait for the Portuguese ships coming from China, Manila, Macassar, and all the Malucco Archipelago. It has many channels so narrow that in places the branches of the trees on shore touch the ships; and the currents are very strong. The water, though deep, is so clear that the fishes can be seen swimming about in it. Fish is brought by the merchants of the ships from the Saletes,[56] or inhabitants of the Straits, who live in very swift *baloons*[36] with their families. They catch the fish by spearing them in the water, and then sell them. These Saletes are a wicked people and especially so to the Portuguese. They are evil-hearted and treacherous, and the best spies the Dutch possess. Wherever, of the many places in this vicinity, our ships may be, they immediately inform the Dutch and lead them there; so that most of our losses are due to them. This is because the Dutch give a great share of all thus seized. And thus it is very necessary that our fleets of *jaleas*[22] and ships that go to these straits to wait for the said fleets should make war as much as possible on these Salletes, and drive them from these parts.

The most important voyages undertaken from Malacca are, as beforementioned, those to China, all the southern merchandise being exported there from Malacca, but now nothing but a little pepper is exported and little, if any, cloves; our trade and the rest is in the hands of the Dutch, who are lords of the Ilhas de Banda, from whence they drove out the natives; who wander homeless throughout the southern lands, waiting some opportunity of revenge and of regaining their lands. The other exports to China are the same as those which come from India, and as regards Manila what is brought from there has also been already stated. It is a law of Malacca that no boat coming from the region of the said straits, shall pass without putting in at Malacca and paying duties on all the cargo, the rate being ten per cent and further two per cent to the town for the fortification and artillery. And it has happened that some vessels which have passed without putting in at the fortress have been supposed to be lost.

There is communication also between Malacca and Macassar, an island three hundred leagues west of Malacca, belonging to a Moorish King who knows the Portuguese tongue very well, and has many Portuguese in his lands and is very friendly to them. Stuffs only are taken there in exchange for the merchandise brought to the place by the southern tribes. The land yields an abundance of provisions of tortoise shell, and Malacca receives its chief supplies from it. All parts of the state are in communication with this island. It has churches and fathers who administer the sacraments to the Portuguese residents and visitors. This King has promised not to receive the Dutch in his lands, but he has Danish and English residents. When this king and all his people folio 386*b*. were heathens, he sent to Malacca for a priest to instruct him in the Christian creed, which he intended to adopt if it pleased him. It is said that there was more delay than there should have been in such an important matter, and that a sailor, a Moor called Lucar, arrived at the country in the meantime and taught his creed to the King, who considered it so good that he immediately adopted it.

From Malacca to Pera is a distance of forty leagues of coast to the east. The King of this place was for many years a vassal of His Majesty and paid in tribute a large quantity of tin. Three years ago he refused the tribute saying that only if His Majesty would deliver him from the King of Achem he would be His Majesty's vassal and pay tribute. He said that the numerous fleets from Achem, which throng these seas, frequently attacked his lands devastating them and taking the people captive. He well knew, he said, how much more important it was to be His Majesty's vassal than to be vassal of the King of Achem. He said that he had no power however to resist the tyrant and his great forces, and that if His Majesty did not supply the means, he himself must seek a remedy in his own kingdom by becoming a vassal of the King of Achem, and paying to him the tribute he formerly paid to His Majesty. In spite of this, he was able to resist our fleet when it was sent chastise him.

There are great tin mines in his kingdom, the metal of which we have already spoken, and thus five or six quintals[57] of tin are yearly extracted from them. The greater part of it formerly came to Malacca, but now not a third part is sent there. The rest is taken by the Dutch to Achem, and thence they carry it to India with great profit.

The factory possessed by the Captain of Malacca at Pera was one which at one time yielded greater profit than any other. But now it yields nothing, and for this and other reasons the fortress has become so ruined that in the year 1633 no one could be found willing to fill the post of captain; and a captain was appointed and sent by the viceroy.

NOTES.

1. Juntana. A corruption of the Malay words *ujong*, end, and *tanah*, land—literally "land's end": it is the name applied to the lower part of the Malay Peninsula. Ujontana or Ujantana are the more common forms in the Portuguese accounts: thus de Barros (in A. D. 1552) writes, "you must know that Ujantana is the most

southerly, and the most easterly point of the main land of the Malacca coast which from this point turns North in the direction of the Kingdom of Siam."

Godinho de Eredia in his Declaracam de Malacca e India Meridional invariably wrote it Ujontana, thus VJONTANA—which Janssen, in his French translation has rendered throughout as Viontana. Pinto (A. D. 1614) has Jantana.

Marsden in his "History of Sumatra" (p. 345) writes of the "King of Oojong Tana (formerly of Bintang)" and is obviously referring to the ruler of Johore.

2. Panagim. The map in the M. S. shows this to be the Linggi River—Godinho de Eredia also gives the northern and southern boundaries of Malacca as the Panagim and the Muar Rivers.

3. "Married Whites." The Portuguese "married man" formed a distinct class in Portuguese. There was the governing class, whose duty it was to administer the settlement, the military class whose duty it was to defend it, and the "married man" whose duty—like that of the colonists of early Greece, it was to populate it. The Malacca Portuguese of the present day are the descendents of the married men. Godinho de Eredia says "in the interior of this fortress there are, exclusive of the garrison, three hundred married men with their families."

4. Straw huts: in other words, atap houses.

5. Poisoned weapons were used with considerable success in the defence of Malacca against Albuquerque. The Commentaries after referring to the "blowing tubes with poisoned arrows" (which nowadays are used only by the aborigines) say:—

"Of the men struck by the poisoned arrows on the first day, none escaped but one Fernao Gomez de Lemso, who was burned with a red hot iron directly he was struck so that ultimately God spared his life."

Poisoned chevaux de frise—the Malay *ranjaus*, sharpened stakes stuck point upwards in the ground, are referred to in Albuquerque's account of the fighting on the second day of the defence of Malacca.

6. Candy. A weight used in South India: it varies (as do all weights and measures) in different places, but may be put at 500 pounds.

Yule and Burnell's Glossary contains the following:—

"The word is Mahratta *Khandi*, written in Tamil and Malayalam *Kandi*. The Portuguese write it *Candil.*"

Among the passages quoted in the Glossary is this one from van Linschoten (A.D. 1598): "candil is little more or less than 14 bushels wherewith they measure Rice, Corn, and all grain."

Whitaker's Almanack gives among the Indian weights:—1 candy = 500 lb.

7. Jor. Johore. (Although the "papers upon Malay subjects" published by direction of the Federated Malay States Government have adopted the spelling--Johor, I venture to take this opportunity

of recording that instructions for the adoption of the spelling—Johore—were issued by the Government of the Straits Settlements in Government Gazette Notification No 377 of 1899.)

8. Pam. Pahang. Pam is the form in which the name is most commonly found. Purchas in His Pilgrimes has variations Paam and Pan.

9. Assegay, A throwing spear. It would appear that the Portuguese found this word in use in South Africa, and applied it generally throughout the east. (Yule gives its derivation as the Berber word zaghaya with the Arabic article prefixed, and adds an interesting list of quotations of its use by early travellers). Godinho de Eredia in his account of the "army" of Malacca also writes of the assegay.

10. **Saligas.** The author's equivalent "darts of fire-hardened wood" is correct. The word is Malay—*seligi*. Malay boys generally make the head of a *seligi* of bamboo, out to a razor-edge in the shape of a spear-head, and use it for spearing pelandok and napu. In the days when the Malacca Malays used poisoned weapons, a *seligi* was of course as dangerous as any spear.

11. **Bows and Arrows** Both in Malay and in Javanese, the bow is called panah, and the arrow the "bow's child". The use of these weapons, which is unknown to the Malays of the Southern end of the Peninsula, would appear to have been borrowed from the people who thronged there in the days, immediately before its capture by Albuquerque, when it was the meeting place of the trade of the Indian and the Pacific Oceans.

12. **Sumpitan** The sumpitan (sumpit—to blow) is the tube, and not the dart which is known as the "anak sumpitan." It is still the principal weapon of the aborigines.

13. Climate of Malacca. Godinho de Eredia writes thus of the climate of Malacca:—

"The air in this region of Malacca is very fresh and very healthy; the opposite of what had been thought by the ancients, notably Aristotle and Ptolemeus who affirm that the part of the world between the tropics of Cancer and Capricorn is very hot and burning, and that the atmosphere there is torrid. This land of Ujontana is truly the freshest and the most agreeable in the world. The air there is healthy and vivifying; well suited for keeping the human body in good health, being at the same time hot and moist. Neither the heat nor the humidity are however excessive: for the heat is tempered by, and counteracts the humidity which results from the rains which in this region are frequent throughout the year, especially at the changes of the monsoon."

This description, doubtless, savours of hyperbole, but as the early Chinese travellers condemned the climate of Malacca as "unwholesome," and as this condemnation is repeated in Whiteway's "Rise of the Portuguese Power in India" (page 5) it is well to record a more favourable opinion.

14. River Fermozo. The Batu Pahat river was known to the Portuguese as Rio Fermozo. (Crawfurd's Descriptive Dictionary: Article Malacca). Captain

Sherard Osborn in a map of the Malay Peninsula in his book "Quedah" (A.D. 1838) shows a Mount Formosa south of Malacca. A Formosa bank is shewn at the mouth of the Batu Pahat river in this Society's map of the Peninsula dated 1898.

15. Boundaries of Malacca. The boundaries are given in their proper order: North, East and South. "The land of the Menamcabos" (i. e. Menangkabau men) is Rembau, one of the Negri Sembilan on the North. "Rindo" is the district washed by the Endau river, which flows into the sea on the East coast of the Peninsula, and forms the boundary between Johore and Pahang. Tamungam (i. e. Temenggong) is Johore.

16. Rindo. Endau. *Vide supra.*

17. Tamungam. Johore was governed by a Temenggong subject to the Sultan of Dai, and Pahang was governed by a Bendahara also subject to the Sultan of Dai. The Malay expression is *Baginda di Dai, Temenggong di Johore, Bendahara di Pahang.*

18. Betre. This is the Portuguese form of the word we generally write as betel. The native name (Malayalam) for betel-leaf is vettila (the para or simple leaf).

Garcia de Orta (Goa 1563) writes thus in his colloquies:

"We call it *betre*, because the first land known by the Portuguese was Malabar..............all the names that occur, which are not Portuguese are Malabar, like *betre*."

19. Tin, Tin is mentioned in a Chinese account of Malacca dated A.D. 1416. It is thus translated by Groeneveldt. (Miscellaneous Papers relating to Indo-China. Second Series Vol. I page 244.)

"Tin is found in two places of the mountains, and the king has appointed officers to control the mines. People are sent to wash it, and after it has been melted, it is cast into small blocks weighing one cati eight taels or one cati four taels official weight: ten pieces are bound together with rattan and form a small bundle, whilst forty pieces make a large bundle. In all their trading transactions they use these pieces of tin instead of money."

20. Tigers. A fuller account of the exorcition of these tigers by the bishop is given by Gordinho de Eredia in a chapter of which a translation is given in the appendix.

The tigers of Malacca had long been famous. In the "Ying-yai Sheng Lan" (A.D. 1416) there is mention of a "kind of tiger which assumes a human shape, comes into the town and goes among the people." The commentary gravely adds that "when it recognized it is caught and killed." The Malay superstitious regarding were tigers are too well-known to require repetition here.

21. Cruzado. A silver coin (formerly gold) now equivalent to 480 reis, or about two shillings of English money. It was worth much more relatively in the seventeenth century.

22. Jalea. A kind of galley much used by the Portuguese. It carried a number of fighting men.

There is the following mention of a jalea in the Storia do Mogor (Vol. I page 370.)

"The king of Arakan.....................sent him back to his father with a number of boats called *jalias*, which are small galleys commanded by Portuguese subjects of the said King." The word is connected with "galley" and with "jolly-boat:" see the very interesting article "Gallevat" in Yule and Burnell.

23. Pulopinam. Penang. Lancaster's visit in the "Edward Bonaventure" in 1592 is, I believe, the first recorded landing in Penang, but the present account would make it appear probable that the Portuguese scouting galleys called at the island before his time. May is the month in which the South-West monsoon sets in, bringing the sailing boats from India. In December the North-East monsoon, which brings the Chinese trade down to Singapore, is in full force.

24. Junsalam. Junk-Ceylon. The corruption of Ujong Salang, (see article Junk-Ceylon in Yule and Burnell). It is now better known as Tongkah. In September or October, the fair weather, along the West coast of the Peninsula, begins with the breaking of the North-East monsoon.

25. Para. I do not know this word. In the connection in which it is used it does not appear to have anything to do with 'bahar' or 'bhara.'

26. Alquerie. An alquerie is said by Vieyra (quoted in Albuquerque (Hakluyt) Vol. IV, page 88) to be the equivalent of "one peck, three quarts and one pint of English measure."

27. Bantim. Godinho de Eredia describes a *bantim* as being a kind of skiff, a smaller vessel than a *jalea*, carrying oars and masts, and rudders on both sides, and as being used for sea-fights. Wilkinson's Dictionary gives *banting* as a native sailing boat with two masts. Crawfurd leaves it as "a kind of boat." Van Eysinga in his Malay-Dutch dictionary has *bantieng*, soort van boot met twee masten.

28. Quartel. No book of reference, to which I have access, gives this word.

29. Bezoar stones. Concretions found in the stomachs of certain animals and supposed to have marvellous antidotal virtues. The Portuguese generally called them *pedra di porco*, but in Borneo they are, I believe, most often found in a species of monkey, and in Pahang in porcupines. Pahang is still famed for its porcupines' bezoar stones.

30. Porcupine quills. The reference would tend to show that the bezoar stones referred to immediately above were probably those of porcupines.

31. Agallochi-um. Eagle-wood, or *kayu gharu*: see the article eagle-wood in Yule and Burnell.

32. Japam-wood. Sappan-wood or Brazil-wood. See both articles in Yule and Burnell.

33. Patani. Patani was from its position on the east coast of the peninsula a very important trading centre, and when the East India Company issued instructions to its agent in the east in 1614 (circa)

[vide an article in Journal No 54,] it selected, as the four principal stations, Surat on the west coast of India, Coromandel on the east coast of India, Bantam in Java, and Patani in the Malay Peninsula. "The command of him at Patani was to stretch over Siam, Cambodia, Cochin-China, Japan and Borneo; and the places thereabouts."

34. Patacas. Water-melons: see the article pataca in Yule and Burnell.

35. Queen of Patani. There are very interesting accounts of the queen of Patani and of the custom of the country in the "Calendar of State Papers, Colonial Series, East Indies, China and Japan" Volume I.

36. Baloons. Godinho de Eredia has the following account:—

"The vessels used by the inhabitants of Ujontona are not great. They have *balos*, vessels used for freight, with oars and carrying sails like those of a frigate. The body of the boat is of hard wood, and the frame is made of branches of the *nypeira* palm and of canes laced together to keep out the water. They have one or two masts, and the ropes are made of rattans The sails are made of a kind of palm known as Pongo. At the stern are two rudders one on each side."

De la Loubere (Historical Relation of the Kingdom of Siam A. D. 1888) gives a long account of the "balous" of Siam, (page 41) and has four engravings of highly ornamental and elaborately carved barges, with lofty poops and bows, used by the king and by high officials on state occasions. I venture to think that the derivation which Yule and Burnell suggest for tor this word in their article "Baloon" is incorrect, and that the probable derivation is from the word *ballam*, or *vallam*, used for dug-out canoes in Ceylon. See Emerson Tennant's Ceylon Vol. II Page 549.

37. Camudes. The Malay word *kamudi*, a rudder.

38. Panchelloi. I do not know this word.

39. Manchua. Manji is the Malayalam word for a large cargo boat with a single mast and a square sail much used on the Malabar coast. The Portuguese made *manchua* out of the word.

40. Angely. Perhaps another form of the word agila, i.e. eagle wood—vide Note 31 supra.

41. Benzoin. Or benjamin: kemennyen; the resin of the *styrasa benzoin*: for a derivation of the word, and an account of the resin, see the article in Yule and Burnell. See also the article in Crawfurd.

42. Almond Milk. I do not know what this may be.

43. Lac. The resinous incrustation produced on certain trees by their puncture by the lac insect [*coccus lacca.*] For an interesting account of this resin, and of stick-lac, seed-lac, and lacquer, see the article lac in Yule and Burnell.

44. Calambac. Eagle-wood—See the article Calambac in Crawfurd.

45. Pahang. Gold. The "gold mountains" of Pahang, i.e., the land in Ulu Pahang, are mentioned in the history of the ming dynasty. (Vide Groeneveldt p. 256.)

The two rivers are probably the Rompin on the South, and the Kuantan on the North. 46. Pahang Rivers.

Pulau Tioman, off the Pahang Coast. It belongs to the State of Pahang. 47. Pulo Timao.

Pelandok; the mouse-deer, or chevrotain (*tragulus javanicus.*) 48. Palando.

Plantains or bananas (*musa paradisaica*) "the fig of Paradise" or sometimes "the apple of Paradise." The Portuguese always called the plantain "the Indian fig," and in the West Indies the common small variety of plantain is still called a fig. 49. Figs.

i.e., damar. 50. Tar.

Johore was repeatedly ravaged by the Achinese during their successive attacks upon Malacca, of which the last took place in A.D. 1628, when the Achinese fleet was practically annihilated in Malacca harbour by the Portuguese. 51. Johore.

An insight into the meaning of de Resende's grim expression that Johore was "once again becoming inhabited" is afforded in Marsden's History of Sumatra (p. 364) where there is the following passage regarding the King of Acheen.

"The disposition of this monarch was cruel and sanguinary.........., The whole territory of Acheen was almost depopulated by wars, executions and oppression. The King endeavoured to repeople the country by his conquests. Having ravaged the Kingdoms of Johor, Paham, Queda, Pera and Delhy, he transported the inhabitants from those places to Acheen to the number of twenty two thousand persons. But this barbarous policy did not produce the effect he hoped; for the unhappy people being brought naked to his dominions and not allowed any kind of maintenance on their arrival, died of hunger in the streets."

Indragiri. 52. Andregy.

Siak. 53. Siaca.

I am afraid that I cannot follow this account. The Siak river empties itself into the Straits opposite Bencalis Island. It is difficult to understand what the other river is (unless it is the Kampar) and what island Sabam is. 54. Bencalis.

The *terubok fish : clupea kanagurta.* This excellent fish, which is like a herring in taste, is common on the Kedah coast, but practically unknown in the Penang market. The dried roes are however commonly used throughout the Straits as a *sambal* with curry. For a full account of the fish and of the industry connected with its capture, see Crawfurd (article Trubo) where several references to early travellers are given. 55. Trubo.

I cannot indentify this river. 56. das Galles.

These are the celebrated "orang laut," or "Sea-Sakies" of the Malay Peninsula, of whom the boys that dive off the mail steamers at Tanjong Pagar are the descendants. A few still survive at Jugra, in Selangor, and in places along the Pahang coast. There are considerable numbers of them along the coast near, and north of Tongkah. 57. Saletes.

Godinho de Eredia gives this account of them: "Before the founding of the town of Malacca, the place was inhabited by Saletes, a race of fishermen, who settled themselves under the shade of the Malacca trees there. They used pointed javelins called Saligi and pursued fishes with such address that they could transfix fishes in the depths of the sea, and they used no other weapon. They were a wild, cannibal race."

Most of the early travellers have interesting accounts of this extraordinary people. See the article "orang-laut" in Crawfurd.

Saletes is the Portuguese name for these people. It is a corruption of "orang selat," selat being a Strait, and used then, as now, with particular reference to the Straits of Singapore.

58. Quintal. In the Metric system, a quintal (or cental) is one hundred kilograms, and according to Whitaker's Almanack the equivalent of 1.968 cwt. In old tables of weights and measures, a quintal, or cental, Avoirdupois, is shewn as being a hundred pounds.

The following is a table of weights:

1 quintal = 4 arrabas
1 arrabo = 32 arratels
1 arratel = 2 marcos
1 marco = 8 oncas.

APPENDIX.

A translation of Chapters I. and XV. of Gardinho de Eredia's "Declaracam de Malaca."

Regarding the City of Malacca.

Malacca is a word which means Mirobolan or Monbain, the fruit of a tree which grows on the banks of the Aerlele, (Ayer Leleh), a stream which flows from the slopes of Bukit China to the sea, on the coast of Ujontana. It was on the banks of this stream, on the South East side, that Permicuri, the first monarch of the Malays, founded the town of Malacca, which to-day is so well-known throughout the world.

It is situated in 2. 12′ of north latitude, in the torrid zone; and the longest day consists of 12 hours 6 minutes. Ptolemy makes no mention of Malacca, which is modern and was given to it by the monarch above mentioned, who founded the town, in the year 1411, in the time of Pope John XXIV. when King John II. reigned in Castille and King John I. in Portugal.

Before the founding of Malacca, the Saletes, a tribe of fishermen, congregated in this place, in the shade of the trees which bear the mirobolans. These fishermen used pointed javelins called "soliques," i.e. seligi, and threw them with such skill that they could transfix fishes at the bottom of the sea. They employed no other implements of fishing. They were inhabitants of the coast of Ujontana, in the southern sea, and a wild and cannibal race.

An old and very narrow isthmus started from the point of Tanjon-Tuan, now called Caborachado (Cape Rachado) and crossed to meet another point called Tanjon-Balvala, on the coast of Samatta, or, by corruption, Samattra (Sumatra).

It was by this isthmus, which extended between two seas, one lying on the North and the other on the South, that the natives from the main land of Ujontana crossed over to Samatta.

This name of Samatta means Peninsula, or Chersonese; and it is this peninsula that Ptolemy mentions under the name of the Golden Chersonese. We shall have occasion to return to this further on.

Permicuri chose this place because he considered it capable of being placed in a state of defence. This monarch had to protect himself from the ruler of Pam (Pahang), a territory in the interior of Ujontana.

This ruler made occasional armed attacks upon Permicuri, for he sought vengeance for an act of treachery, of which Permicuri had been guilty towards a relative of his, the "Xabandes" (Shahbandar) of Singapore, whom Permicuri had assassinated in spite of the proofs of friendship he had received from him, at the time when Permicuri pursued by his father-in-law, the old Emperor of Java, had sought a refuge in Singapore.

Permicuri therefore fortified himself on the crest of the hill, in a strong position where he was free from the fear of being taken by his enemy. He evinced great energy and zeal in enlarging his territory, which he extended beyond the river Aerlele; and he developed his new State by encouraging commerce and traffic with the surrounding tribes, who all came to Malacca to fish for the "Saveis", a kind of shad, whose eggs placed in brine formed a much sought-after dish. Later, when the port had become frequented, the merchants of Coromandel, chiefly the Chelis (Chulia i.e. Klings) came over with stuffs and clothing; and they thus attracted thither the inhabitants of the surrounding islands, who helped to populate and to bring custom to the port, by bringing merchandise and exchanging their gold and spices for the stuffs of Coromandel.

This is the origin of the wealth of Malacca, which became one of the richest and most opulent States in the world. At this period the natives were possessed of much ingot gold, and the prosperity of the country continued under the reign of Permicuri's successors who were Xaquemdarxa, (Iskandar Shah) the Sultan Medafarxa, the Sultan Marsusel, the Sultan Alaudim (Ala-ed-Din) and lastly the Sultan Mohameth (Mahmud) who was conquered by Afonso d'Albuquerque, who captured the whole country, a little more than a hundred years after its foundation, on the 15th of August, 1511.

After conquering Malacca, the invincible Captain constructed a stone fortress at the foot of the hill on the sea-shore, to the South-East of the mouth of the river, where the Sultan Mohameth had built the palaces where he had kept the treasures with which he escaped after crossing the river, and taking refuge in the interior of the country. Mohameth, after passing through the country of Pam, intrenched himself at Bentam, whence he proposed to make expeditions against Malacca. But Albuquerque had by this time finished the work of fortification of this town; his commanding position, his artillery and his powerful garrison made him the terror of the Malays and always maintained the authority and honour of the Crown of Portugal. Malacca was victorious in repelling numerous attacks by Malay Kings and other neighbouring rulers.

The fortress forms a square each side of which measures 20 yards, it is 80 yards high (*sic*), and is protected on the east by walls built of stone and plaster; and in the interior there is a spring of water. In time of war or disturbance the inhabitants can be given shelter and provision there. The castle, or the tower, is as high as the hills. It was not built on the hill because it was preferable to place it lower down, in the sea itself, to ensure re-victualling in case of war. When this had been done, wooden walls were erected around the groups of Malay dwellings.

Two walls, built of stone covered with plaster, started from the angle formed by the sea to the west in two lines: they followed the shore and turned at right angles when they reached the height of the ground where the hospitals and the Brotherhood of Mercy were built; and thence the two lines turned, the one to the North for a distance of 260 yards as far as the angle of the rampart of St. Peter, at the mouth of the river opposite the castle, and the other to the East for a distance of 150 yards at the turn of the coast by the gate and rampart of St. James. Another wall, which was built at the same time, extended from the rampart of St. Peter as far as the gateway of the Alfandega, and thence, for a distance of 300 yards, followed the river to the North East as far as the acute angle formed by the rampart of St. Dominic. From the gateway here, a wooden wall extended to the South East, for a distance of 200 yards, to the obtuse angle at the end of the Avenue of the Mother of God. Another wooden wall extended from the gateway of St. Anthony for a distance of 200 yards towards the South East beyond the rampart of the Virgins as far as another gateway on the rampart St. James. The total length of the walls was thus 1310 yards of five palms to the yard. In later days the architect in chief, Joao Baptista, by order of the King, prepared amended plans of the fortress. He made a new and enlarged plan of the walls in the South and in the waste land which stretches from the rampart of St. James to that of St. Dominic. His idea was to build new walls of stone and plaster instead of the wooden palisades, but his project was never carried out. Although there were four gateways pierced in the walls, two only, that of the Alfandega and that of St. Anthony, were generally used, and were open for ordinary traffic. In the interior of the enclosed area are the Castle, the Governor's Palace, the Bishop's Palace, the State Council Hall, the Hall of the Brotherhood of Mercy, five Churches—our Lady of the Assumption, the Cathedral with the chapter and episcopal throne, our Lady of the Visitation and of Mercy, our Lady of the Annuciation (in the College of the Company of Jesus, at the very crest of the hill), the Church of St. Dominic in the Convent of the Dominicans and the Church of St. Anthony in the Convent St. Augustine—and two hospitals.

Outside the walls are three suburbs, the first is that of Upe (Upeh) on the other side of the river; the second is that of Yler (Hilir) on Tanjonpacer (Tanjong Pasir) on this side of the river; the third, that of Sabba, lies along the bank of the river. Of these three, the principal one is Upe. It is also called the "Tranqueira" or the "Palisade," because of the palisade, or wooden wall, which has been built there parallel with the bank. It is 1400 yards from the mouth of the river. From its extremity a wooden wall extends 120 yards to the East towards the gate of the palisade as far as the "Wooden Cavalier." Thence, following an obtuse angle, another wooden wall stretches across the marshy and muddy ground of the interior, as far as the gate of Campon China which touches the river. In this way, the suburb of Upe, with its country houses and gardens, is well protected from the attacks of the "Saletes." Nevertheless, when preparations are being made for war, this suburb is entirely depopulated and dismantled, its whole population taking refuge in the castle within the walls.

This suburb is divided into two parishes; St. Thomas and St. Stephen. The parish of St. Thomas is called Campon Chelim (Kampong Kling); it stretches along the bank of the river, from the Javanese Bazaar towards the North West and ends at the stone rampart. In this part live the Chelis of Coromandel who must be the "Chalinges" of which Pliny writes in Chapter XVII. of Book VI.

The other parish, St. Stephen, is called Campon China and stretches from the strand of the Javanese Bazaar, for a distance of 800 yards, along the river side to the wooden wall of the palisade at the mouth of the river, and extends, beyond the swampy part of the river, to the plantations of Nypeiras (Nipahs) and of "Brava" palms which grow beside on the brook called "Parit China." In this part of Campon China live the "Chincheos" descendants of the "Tocharos" of Pliny, foreign merchants and natives occupied in fishing. The two parishes of St. Thomas and St. Stephen contain 2500 Christians, men, women, and children, beside the other heathen inhabitants. The houses are all built of timber and are covered with tiles to preserve them from the risk of fire. Stone buildings are, for reasons of defence in case of war, not allowed. At the mouth of the river, on the terrace of the Alfandega, there is a stone bridge on which a sentry mounts guard at night. On the bank, at the place called the Javanese Bazaar, at the entrance to the river, are sold the victuals, rice and grain which the Javanese merchants bring daily in their sailing boats.

The second suburb, that of Yler, is situated on the other side of the river towards the South East, and through it wooden huts covered with thatch (atap) extend for a distance of 1200 yards from the river Aerlele towards the fields of Tanjonpacer, when there is a "banjacal" or guard-house which is its only defence. In this suburb there is a parish Church dedicated to our Lady of Pity, which serves a parish of 1300 Christians, without counting the heathen.

From the Aerlele river, or stream, another row of wooden dwellings stretches eastward for 1000 yards as far as the well of Bukit China, which supplies excellent water springing from the foot of the hill, on whose summit rises the Church of the Mother of God and the Convent of the Capuchins of St. Francisco.

Further to the North there is another hill called Bukit Piatto, and all round there are fields and swamps as far as Bukit Pipi, and Tanjonpacer to the South East and South.

The last suburb, that of Suppa, extends from the moat of the rampart St. Dominic. Its houses are made of wood and built on piles, right in the middle of the water. This ground, being swampy and damp, is well suited to the calling of the fishermen who live in this suburb; they tie up their boats and fishing nets along side their houses, and float in the water the timber and forest produce of the interior of the country in which they deal. In this suburb is the parish Church of St. Laurence which serves a population of 1400 Christians and other very numerous natives who live in the swampy ground where the "Nypeiras" or "Brava" palms, from which they distil the nypa wine, grow. Besides these three parishes *extra muros* there are three parishes in the interior of the country; St. Lazarus, Our Lady of Guadeloupe, and Our Lady of Hope. They are situated on the bank of the river and contain a population of 2200 Christians and heathen natives or vassals who live inland in farms where they raise cattle and farmyard animals. In the eight parishes alone in the jurisdiction of Malacca the Christian population reaches 7400 souls, without counting the heathen and the vassal natives.

The State is administrated by a Governor elected for three years, by a bishop and by other dignitaries of the episcopal see assisted by City Magistrates organised in the same manner as the Tribunal of Evora of the Fathers of Mercy, and by royal delegates for the financial and judicial departments.

The State further supports mendicant orders, a Convent of the Company of Jesus with its schools and colleges, the convents of the order of St. Dominic and of St. Augustine, capuchin monks of St. Francis, and ministers of the Christian religion. Inside the fortress live, besides the garrison for its defence, 300 married Portuguese with their families. There are in all four religious houses, eight parishes, fourteen churches, two chapels of the Hospitalers, and some hermitages and oratories.

Regarding Gunoledam (Gunong Ledang, or Mount Ophir.)

The mountain of Gunoledam, like Mount Atlas, where sybiline caves are found, is a high mountain. It is half a league in height, and a little more than a league in circumference at its base: it is quite isolated. If one believes a story, which is widely spread among the Malays, the queen Putry, the companion of Permicuri, who founded Malacca, retired to this mountain, and, by enchantment (for by magic she became immortal) lives there still. Her home is on the heights of the mountain in a cave, where she lies on a raised bed which is decorated with the bones of dead men. She is clad in silk and gold, and looks like a lovely young girl. Round this cave are planted thick rows of bamboos, in which one hears harmonious voices and sounds of music. It is something like this that Marco Polo describes when he writes in the 44th chapter of this first book of the music of dulcimers which was heard in the desert of Job.

At a certain distance from the cave and the bamboos are groves of fruit trees full of delicate fruit and singing birds, and not far from them are the forests where roam the tigers who guard this enchanted Putry, this new Circe of Thessaly.

This story is probably not true, but the natives firmly believe in it. They further assert that on this mountain is a cave like that of the Pythians and the Sibyls, and that the forest-dwelling Benuas here learn their magic arts and hold intercourse with the devil. Here, without seeing any one, they hear mysterious voices which reveal to them not only the qualities of plants and of miraculous and medicinal herbs, but the art of preparing medicines, both beneficial and harmful. In order to get this information, the Benuas employ a herb called *Erba vilca*, which is found on Gunoledam as well as in America. By drinking a decoction of this herb, they put themselves in communication with the devil or with Putry, who like the Thessalian witch Erichto, and like the enchantress Circe, takes the form of animals and hides.

These forest-dwelling Benuas in the same manner, and by means of the same practices and words would take the forms of tigers, lizards, crocodiles or other animals. They then had supernatural power, and could hold conversation with people in remote places, like the sorceress of Tuscany, who could show to those who consulted her things that were happening at a distance.

While speaking of this subject, I ought to make mention of the first bishop of Malacca, Dom Georges de Santa Lucia, whose merits should be always exalted. He wished to put an end to the harm caused to the country by these forest-dwelling Benuas, who in the shape of tigers used to enter the town of Malacca, and kill unresisting women and children.

He wished to excommunicate them and had public prayers made in the cathedral. Then, at issue of the Grand Mass and after the procession of the feast of the assumption of our lady, the protectress of the fortress, he solemnly excommunicated these tigers. Since then they have never entered a village, nor killed a man, woman or child. For this Christians gave thanks to God. This miracle astounded the natives and as a result, many of them and many Cheli (Kling) idolators were converted in 1560.

Singapore old Straits and New Harbour.

BY WARREN D. BARNES.

It has long been a tradition that the old straits of Singapore were the Sĕlat Tĕbrau between the Island and the Johore mainland and a new tradition is now springing up that the passage through New or Keppel Harbour was discovered by the late Admiral Keppel. The object of this paper is to show that both these traditions are without foundation of fact and that the old Straits of Singapore are none other than the present Keppel Harbour.

It is unnecessary to point out in detail how ill-adapted are the Johore straits for sailing vessels making a passage; the western entrance is by no means easy, the distance is long and ships using the channel would be exposed to strong tides, be liable to be becalmed and, most important of all, be at the mercy of the pirates who haunted these waters for centuries. On the other hand the passage through the New Harbour is short and not particularly difficult. If it had not been used in former times some explanation of so singular a fact would have to be found.

The most convenient way of examining the question will be to deal in chronological order with the principal historical references to these Straits.

A. D. 1436.

Hsing-ch'a Sheng-lan

(W. P. Groeneveldt, Notes on Malay Archipelago and Malacca in Essays relating to Indo-China, Second Series Vol: I. page 203).

> The strait of Lingga is situated to the North-west of Palembang (San-bo-tsai), high mountains face each other as the teeth of a dragon and between these the ships pass.

(Earlier than 15th century)

Charts from Wu-pei-pi-shu with sailing directions (The Seaports of India and Ceylon by George Phillips) China Branch R. A. S. New Series vols. XX. and XXI.)

> Starting from Malacca with a course of 120° to 135°, in five watches the ships will be off Arrow-shooting Hill; then with a course of 120° to 135° in three watches Pulau Pisang will be reached and with a course of 135° in five watches more Carimon. Thence with a course of first 100° to 120° and later 120° Long-waist Island is reached and the ship comes out of Dragon-teeth Gate left. From Dragon-teeth Gate with a course of 75° to 90° in five watches the ship will reach Pedro Branca.

The words Lêng-gê-mûy (Amoy dialect) translated by Groeneveldt "the straits of Lingga" mean dragon-teeth gate; strait, or passage and in the Amoy dialect "dragon-teeth" is the name given to the two upright pegs in the bows of a ship through which the cable runs. The passage in question cannot be the Straits of Lingga which lie much too far away for the second quotation and I suggest that it is the New Harbour. The western entrance to this harbour has been altered since old times, as is evident from the quotation below from "Prisoners their own Warders." I suggest that owing to the similarity of names the Chinese accounts confuse the island of Lingga with the dragon-teeth passage.

A. D. 1598

Linschoten. I translate from a French translation "Le grand Routie de Mer," Amsterdam 1619 pp. 40-42.

In Chapter XX. Linschoten gives sailing-directions from Malacca to Macau. Having brought his mariner down to Pulau Pisang and Tanjong Bulus he says:—

> "At a league from this Cape is a river [Sungei Pulai] and a short league further another river [Sĕlat Tĕbrau] with a large mouth in which lies a little island called Sincapura [a mistake for Merambong] where the bottom is good and clean. This river empties itself at the port of Iantana [Ujong Tanah, Johore] the place where Antonio de Meno went once by mistake with a ship of eight hundred 'casses,' each 'casse' being three and a half quintals Portuguese weight, and got out again. From this river the land trends to a point to the South and at this point begins the entrance to the first straits [Selat Sembilan] through which you must pass. On the North of this bay the land lies higher than on the South, where it is low and uneven, with a tree covered hill showing above its surroundings. This is the end of the land. For on the East you find islands and rocks stretching first to the South and then to the East in the form of a bay. From the above mentioned Cape of Tanjamburo [Tanjong Bulus] to the entrance to these straits the course is due East and the depth seven or eight fathoms.
>
> "Any one wishing to sail to China by Sincapura [Singapore] should if he comes by Pulo Picon [Pulau Pisang] at the beginning of July keep close to the island of Carimon; for the Java monsoon which is on then always blows from the coast of Sumatra. Also if you keep on the Carimon side when you leave it you come right on to the entrance of the straits. The depths differ on this course and when you come from the Tanjong Bulus side the country at the entrance of the strait 'a l'apparence d'un tronc' which is a certain sign of the said entrance. Here you should tack (tiendrez vostre course en louvant) so as to make the entrance easier.
>
> "These first straits [Sĕlat Sembilan] have at their entrance two shoals [Basses] which come from the Cape one on each side. On the South side at the beginning of the straits is a long range of islands stretching to the East which forms the straits. To enter you must all the time keep closer to the South side than to the other. At first entrance you will find twelve ten and nine fathoms and when you have got so far in that the land to the South, that is the islands mentioned, are in

one, you will see in front of you on the other side a cape with a little red hill. You will do well then to bear over a little to that side until you have passed the first island [Pulau Pesek] between which and the second [Pulau Ayer Limau] lies a shoal which can be seen sometimes at low water and which stretches half way across the channel; however you will be careful always to have the lead in your hands to know where you are. Having come close to this cape and hill bear off again to the right, for this is the only shoal between these islands, and in this way you will carry on to the East for about half a league with this same depth of eight or nine fathoms. Thence this range of Islands along which you are sailing trends to the South-east and immediately afterwards you will see a little further on to the right of these islands a round island stretching a little behind from one to another, [the French is not clear] you will carry on along this leaving it on your right. You will always have eight or ten fathoms with a muddy bottom. On the left hand, that is on the North side, the land has many bays among them a large one which trends to the South. On this South side is another round island which you will leave on the same side. You will beware of this North side as it is full of shoals and will hold on your course on the other or right hand side. When you come close to the above mentioned small round island on the right hand side you will see straight in front of you, that is to say, at the end of the range of islands along which your are coasting, another small low island with a few trees and a shore of white sand [? Cyrene shoal]; this is directly opposite the East and West straits of Singapore. You will bear down on this island and when you come close to it you will see the straits, towards which you will steer keeping off a little both to avoid the shoals and reefs to the North and also so as not to be carried by the tide to the South side of the entrance of the straits. On the North is a sandy beach [Pasir Panjang] about a cannon-shot long having a kind of bay at the end of it where fresh water can be got. The whole way along this beach you will find a good bottom fit for anchoring if necessary. Coming up to the beach you will find currents which will carry you down to the entrance of the straits but you can avoid them by keeping off. You will do well also not to pass the end of these straits on the North side as there are reefs and banks there.

"The entrance of the straits is about a stone's throw across between two high mountains and runs a cannon-shot length to the East. The least depth in the straits is four and a half fathoms. At the entrance at the foot of the Northern mountain is a rock which looks like a pillar. It is commonly known as Varella del China [Lot's wife]. A little further on in the straits and on the South side is a bay in the middle of which is another rock below water and a shoal with reaches from this rock to the middle of the channel. About an arquebus-shot further on, on the same South side, is a passage reaching to the sea on the other side thus making an Island [Sĕlat Singkeh]. It is too shallow for any but small craft (petites fustes) to use. In the middle of the bay opposite the opening of this passage is a rock or rocky shoal two fathoms under water which reaches a little out of the bay to the middle of the channel. When you are up to this bay you see a straight hill which forms a cape at the end of the straits. Having doubled this cape you see a red hill near which the bottom is good and clean, after which the land trends to the South-east.

On the North side of the straits there are in all three bays, of which the first two are small and the third, which lies opposite the cape of the red hill at the end of the straits, large. This third bay has a bank of rock which is uncovered at low water and reaches from headland to headland; care must be taken of it. Everything on the North side outside this bay is throughout the channel clean and good from one headland to the other.

At the exit from the passage are two reefs, one of which is opposite to the mouth of it about a cannon-shot away (a la portée d'une pièce de fer) running North and South; the other is to the South of the mouth and a short cannon-shot away (a la portée d'un canon mediocre) stretching to the East so that the two make a cross; both can be seen at low water. The channel between them has barely four fathoms with a muddy bottom; outside the channel the bottom is sand whereby many ships have come in danger of shipwreck. If therefore you have to go that way take care when leaving the channel not to steer due East, and if you wish to anchor bear to the South, for if you stop in the current of the straits you may lose an anchor or two through the violence of the ship's motion.

When clear of the straits bear to your right along the land but not coming closer to it than a depth of four fathoms, and when you have passed the first beach, together with a hill and a rock at the end of it, and a bay which lies opposite the hill, and have reached half way to another hill, which is at the other end of the above mentioned passage from the straits, you should then shape your course to the East, not coming within four fathoms on either side for fear of falling on banks and shoals. The bottom of the channel is muddy. You must always have the lead in your hand until you have got a greater depth, which you will soon do. It is safest to use a small boat to sound the channel. When you have reached twelve or fifteen fathoms beware of the South side until you are a league to the East of the Straits, for from fifteen fathoms you would get ten and then would find yourself on some shoal, for there are many shoals and sand banks just there.

These Straits (of Rumenia) have six small Islands [Pulau Lima] on each side of Iantana [Johor] which is on the North of it and along which the course is East and West (the French is not clear). They are about eight leagues distant [from the Singapore Strait]. You will beware of passing between two of them. The sea near here, that is for half a league to the South, is quite clear and fair with a sandy bottom in fifteen fathoms. Half way between the Straits [of Singapore] and the said Islands is the river of Iantana which has a very wide mouth, the entrance to which lies on the East side where large vessels often enter. On the West side, where there is a hill of red earth [Tanah Merah on Singapore Island] just beyond the mouth of the river, is a sandbank which stretches to sea for a league and a half and has been touched by many ships, you should beware of it. At the end of the said islands a reef [Rumenia shoals and North Patch] stretches for a full two leagues to sea East-North-East over which in fair weather only a little foam can be seen but where a heavy sea breaks in rough weather.

Between this reef and the islands is a large channel with a rocky bottom; the greatest [? smallest] depth which I have found is five and a half fathoms, from that seven and a half and again six and eight and a half are found. The width of the channel is a good cannon-shot across. If you wish to use this channel you must turn off your course half a league from the islands without coming closer to them for fear of coming on the banks as happened to Francisco Daginer who nearly lost his ship. Two leagues to the South-East of these islands is another small island which is a reef or rock of white stone and hence called Pedra Branqua [Pedra Branca and Horsburgh Light] and near and to the South of it are other rocks and reefs. To the South also lies the island of Binton" [Bintang].

In the above translation the remarks in square brackets are my own. These sailing directions are wonderfully clear seeing that they are a translation from the French of a translation from the Dutch of a translation from the Portuguese and there can be no doubt that the route which Linschoten taught to his fellow country-men lay through the Sĕlat Sembilan and Keppel Harbour. It may be of value to note that Linschoten never visited the Further East; he arrived in India in 1583 and left it in 1589; his account of the passage from Malacca to Macau must therefore have been drawn from Portuguese sources and it is evident that some of the Portuguese pilots had a competent knowledge of their profession.

A. D. 1599.

Viaggi di Carletti vol. ii. 208-9
quoted in Yule's "Hobson-Jobson" s. v. Singapore.

In this voyage nothing occurred worth relating......except that after passing the straits of Sincapura......between the mainland and a variety of islands......with so narrow a channel that from the ship you could jump ashore or touch the branches of the trees on either side, our vessel stuck on a shoal.

This is a very fair traveller's description of a passage through the narrows of New Harbour but it is not applicable to one round Singapore Island. That a traveller should not have appreciated that Singapore is not a part of the main-land needs no explanation. Linschoten regarded the Sělat Těbrau as a river.

A. D. 1604

Emanuel Godinho de Eredia in his Declaracam de Malaca, written in 1613 and published with a French translation by M. Leon Janssen at Brussels in 1882, gives three sketch maps of the end of the Peninsula.

The one on page 61 is headed Discripsao Chorographica dos estreitos de Sincapura e Sattam Ano 1604, and gives the following places: Tanion buro (Tanjong Bulus) Pulo Cucob, Rio Pule (Sungei Pulai), Salat Tubro (Selat Tebrau), Pulo Ular, blacan mati (Blakang Mati), estreito novo (new straits), estreito velho (old straits), Xabandaria (on Singapore island probably near the mouth of the Singapore river, meaning Shabandar's i.e. Harbour Master's office), Tanjon Ru, Sune bodo (Sungai Bedoh), Tana mera (Tanah Merah), and Tanjon Rusa (at Changi). Additional names are given on the other sketches as follows:— Estreyto Sincapura (Singapore Straits in the same position as estreite velho above) Siquijam (Pulau Sakijang St: John's Island), Pedra Branca (Horsburgh light) Rido de Jor (Johore River), Cotabatu (Kota batu), Batusawar, and Ponta Romania.

The sketches clearly show that three passages were known:— the old and new straits and the Selat Těbrau and that the old strait was New Harbour and the new strait the present main straits. It should be noted that no place names are given near the last, whilst on the South of Singapore are noted the residence of the Malay official and the places where wood and water were obtainable. Valentyn (J. S. B., R. A. S. Vol: XV p. 134) says "on the 5th of May (1606) two prahus of the king of Johor with the Shahbandar of Singapore Seri Raja Nagara reached our fleet," and it is interesting to note that in the Sejarah Malayu (page 250 Shellabear's Romanised edition 1910) we are told of the stout defence offered by the "penglima raayat Raja Nagara batin Singapura," against attacks by Portuguese from Malacca. The presence of a Shahbandar implies visits by foreign ships and traders.

A. D. 1615

Bocarro 428. Yule op: cit: s.v. 'Governor's Straits.'

> 1615. The Governor sailed from Manilla in March of this year with ten galleons and two galleys......On arriving at the straits of Sincapur......and passing by a new strait which since has taken the name of Estreito do Governador, there his galleon grounded on the reef at the point of the strait and was a little grazed by the top of it.

The Governor came to grief in the present Singapore straits.

A. D. 1700

A new Account of the East Indies by Captain Alexander Hamilton... ...who spent his time there from 1688 to 1723......Edinburgh 1727.

Vol II. page 93

> Johore has the benefit of a fine deep large river which admits of two entrances into it. The smaller is from the westward called by the Europeans the Straits of Sincapure but by the Natives Salleta le Brew (Sĕlat Tĕbrau). It runs along the side of Sincapure Island for 5 or 6 leagues together and ends at the great river of Johore.

Vol: II. page 123.

> Upon the East side of the great Carimon is the entrance of the straits of Drions [Durian] and between the small Carimon and Tanjong bellong [Tanjong Bulus] on the continent is the entrance of the Straits of Sincapure before mentioned and also into the Straits of Governadore, the largest and easiest passage into the China seas.

This is probably the 'locus classicus' whence the tradition that the Sĕlat Tĕbrau forms the old straits of Singapore was derived. It would seem that between 1600 and 1700 the passage through Keppel Harbour fell into such complete disuse by European vessels that its very existence was forgotten. It was probably convenient for those ships only which could be worked with sweeps or towed with reship's boats in case of lack of wind, and hence as the size of shipping increased it went out of fashion.

1826

Singapore Chronicle August 1826

(quoted in Moor's Notices of the Indian Archipelago Singapore 1827, page 276)

> These (remarks) are from the Notes of Captain Rous and the officers of H.M.S. Rainbow and may be relied on as correct. [After a recommendation to stand closer in shore from Formosa Point to Pulau Pisang than Horsburgh approves of, the passage continues.] On reaching Singapore straits if a vessel is unable to weather Barn Island with the wind to the Southward she should bear up for the passage through the Selat Sinki or New Harbour. This will be found safe and expeditious for vessels under 600 tons burden but for ships of a larger size it is narrow and confined. The entrance to the passage bears E.N.E. from Sultan Shoal and is bold on each side, the only danger being a two fathom bank on the South side. After clearing the narrows and opening Singapore Harbour steer along Trumba Trumbaya reef a cable's length off and when well to the Southward edge away for the anchorage.
>
> The passage above described was effected with success by H.M.S. Rainbow, the first vessel that has ever come through intentionally. The 'William Parker,' a free trader passed through by mistake some time ago and it was generally considered a very dangerous experiment. The enterprise of Captain Rous has however established its practicability and these notes and observations which were taken with great care will render the passage easy and safe for navigators. In these operations we understand

that Capt. Rous was ably assisted by Mr. Bernard, Agent of Lloyd's, who came in the Rainbow from Malacca and whose practical knowledge of the Straits and Islands made his suggestions and information highly useful in exploring this unfrequented track.

It will be noted that the name New Harbour was in use in 1826.

1841.

" Horsburgh " 5th edition vol : ii. 264.

Singapore Strait called Governor Strait or New Strait by French and Portuguese.

The name Straits of Singapore was first applied to Keppel Harbour then (see Hamilton above) to the Sĕlat Tĕbrau and lastly to the Straits now so called.

1843-4

Voyage of H.M.S. Samarang by Sir Edward Belcher, London 1848. Vol : II. page 186.

Upon a cursory examination of the Chart of this Channel (constructed by Mr. Thompson in 1842) I observe that a *safe* and *short* channel would be available by night and day provided that a light were established on the hill above the Malay village. That a leading mark seen clear of the point of Blakan Mati would bring a steamer from the fairway fork (to either Channel) into the New Harbour by a *direct course* of *twelve miles*.

It will be noted that in 1842 Keppel Harbour had been surveyed.

1848.

"Prisoners their own Warders," McNair and Bayliss, London 1899 page 66.

In the year 1848 we find that the Indian convicts were employed in blasting some considerable part of a mass of rock known to the Malays as Batu Belayer or " stone to sail to " and by Europeans as " Lot's wife." It was a dangerous obstruction to navigation being situated on the Singapore side of the Western Entrance to the New Harbour. It is reported as known to old navigators, of these seas and was shown on old charts over two hundred years ago.

The Government evidently took in hand in this year the improvement of this channel, which they had caused to be surveyed by Mr. Thompson in 1842.

1848.

An anecdotal History of old Times in Singapore. C. B. Buckley Singapore 1902. page 493.

It was in May 30th of this year (1848) that Capt. Keppel wrote in his diary on board the " Maeander " :

" On pulling about in my gig among the numerous prettily-wooded islands on the Westward entrance to the Singapore River I was astonished to find deep water close to the shore with a safe passage for ships larger than the " Maeander." Now that steam is likely to come into use this ready-made harbour as a depot for coals would be invaluable. I had the position surveyed and sent it with my report to thc Admiralty. As it was, a forge was landed and artificers employed under commodious shades all under the eyes of the officers on board."

These repairs on the Maeander were therefore the first repairs done in New Harbour . . . **so it was Keppel who first sailed through New Harbour** and Singaporeans often said that it should not have been called New Harbour, which meant nothing, but Keppel Harbour. This was eventually done on the 19th April 1900 when the old Admiral was on a visit to Singapore.

A visit to the Indian Archipelago in H.M.S. Maeander Capt. the Hon. Henry Keppel, London 1853, page 16,

While preparations were making [May-August 1848] for the establishment at Labuan the Maeander refitted in the snug and picturesque New Harbour which appears to have been overlooked in selecting the first points of settlement; the only objection to it as a harbour is the intricacy of the Eastern entrance; a difficulty which by the introduction of steam has become of little consequence. No place could be better adopted for a coal depot; and as a harbour for a man-of-war to refit it is most convenient. The forge can be landed, boats repaired and artificers employed under commodious sheds and all under the immediate eye of the officers on board. It has another great advantage over Singapore Roads, in the latter anchorage a ship's bottom becomes more foul than in any other I know of, perhaps from the near proximity to the bottom; this is not the case in New Harbour in which there is always a tide running. Although it has the appearance of being hot and confined, surrounded as it is by high land we did not find it so in reality; generally there is a current of air inside while the ships in the stagnant and crowded roads are becalmed.

It will be seen from the above quotations that the gallant Admiral made no claim to have been the first to sail through New Harbour He doubtless know of the number of ships which had used the passage and he does not even say that he used it himself on this occasion. In fact it appears probable that he did not.

A. D. 1857.

Anecdotal History of Singapore page 649.

On the 19th of March H.M.S. *Raleigh* Capt. Turner bearing the broad pennant of Commodore Keppel C.B., sailed into New Harbour . . . As the old admiral was in Singapore when this chapter was being written he was asked . . . if he remembered how it came about that he sailed the *Raleigh* into New Harbour instead of into the Roads. He said that it was because he had surveyed New Harbour while he was in the *Maeander* and had the same Master (navigating officer) with him in the *Raleigh* who had surveyed it with him so he felt quite confident about it although others had been afraid to go in.

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* The italics are mine.

There can have been no difficulty in sailing into New Harbour in 1857 seeing that P. and O. offices there were opened in 1852 (Anecdotal History page 566).

A. D. 1900.

Singapore Free Press 3.1.00.

It was Sir Henry Keppel who first of all in H. M. S. Raleigh in 1856 sailed from the Westward through the new channel which his examination and recommendation created as the New Harbour Singapore.

This is an absurd mis-statement. Hundreds of ships must have passed through New Harbour before 1856.

Straits Settlements Government Gazette Extraordinary 19.4.00. Notification No. 401.

In order to perpetuate the remembrance of the fact that the capabilities of the New Harbour at Singapore as a passage for ships of the deepest draught and an excellent Harbour were first demonstrated by the Hon. Capt. Keppel, R.N. of H.M.S. Dido now Admiral of the Fleet Sir H. Keppel G.C.B., D.C.L.

It is hereby notified for public information that the New Harbour will in future be called and known by the name of Keppel Harbour Singapore.

Singapore 19th April, 1900.

Keppel Harbour is a good name and the late Admiral deserved all the honours conferred upon him, but the reasons given for bestowing this particular one are very unconvincing. Captain Keppel was here in the *Dido* in 1842-1844 but it was not till his next visit in the Maeander in 1848 that he discovered all that he himself ever claimed to have discovered namely that New Harbour was an excellent place wherein to lay a ship up to refit and afforded great natural advantages for a coaling station.

The tradition that the Johore straits are the old Singapore straits will probably never die, but the new legend that Admiral Keppel was the first person to take a good sized ship through Keppel Harbour has got so short a start that it should be possible to overtake it.

An old Royal Cemetery at Pekan in Pahang.

By Warren D. Barnes.

(With three plates.)

The plates to this paper are from photographs of the "Makam Chondong" at Pekan which lies at no great distance from the Istana of His Highness the Tungku Besar. The name "Makam Chondong" should in strictness mean the graves with a leaning shrine over them and it is very probable that the graves were once roofed in and that the building over them fell into decay and became out of the perpendicular. No trace however of such a building is to be seen. The local explanation of the name is that the surrounding trees all "chondong" to the "makam" doing obeisance to it.

The graves are on a platform of earth about 50 feet square, three or four feet high, and surrounded by a shallow ditch. On one side is a large hollow from which the earth to make the mound was perhaps obtained. It appears probable that the sides of the platform were once vertical and faced with bricks. A number of these bricks are still to be seen; they are really flat tiles measuring ten inches by five by two and a half. All the graves are on the Northern side of the platform, the rest is unoccupied.

His Highness the Tungku Besar informs me that he has a distinct recollection of visiting this cemetery about twenty years ago and finding on one of the stones the name "Mahmud" in gold letters. His Highness says that he took particular care to turn the stone over with the inscription downwards. The inscription has however disappeared and an examination of the photographs will show that the names on all the stones have been chipped away, doubtless to obtain the gold used to make them.

I am told that about twenty or thirty years ago a herd of wild elephants did a good deal of damage to the graves. Mr. J. B. Scrivenor the Federal Geologist to whom I submitted a fragment from one of the stones said that it was a fine grained sandstone of no particular interest.

It will be seen that two of the large graves are male and one female. To the west of them and only shown in the small scale photograph is a grave with two plain stones; it is probably a female grave. In the centre of the platform are the fragments of two large grave stones similar to those shown in the larger scale photographs. It is probably on one of these that the name Mahmud was found. Alongside them is an unimportant female grave. My suggestion that the most important person would be buried in the centre was negatived by a native authority who objected that in that case the subsequent and less important persons buried here would have their feet on his head. Difficulties of this nature have not however troubled the present royal family whose graves at Kampong Marhom near Kuala Pahang have no particular order or arrangement.

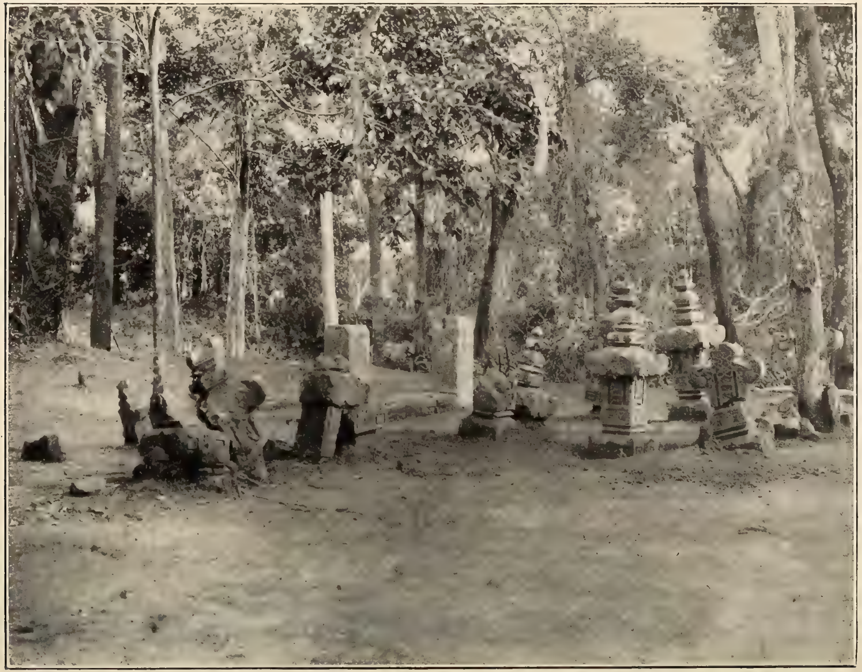
I believe that a careful examination of the undamaged portions of the stones might lead to the detection of other names. I however failed to read any and no one whom I consulted had been more successful.

The only other clue to the indentity of the occupants of these graves is a tradition of doubtful value that in the large female grave is buried one Che Puan Layang who is herself nothing but a name. I could hear of no other traditions.

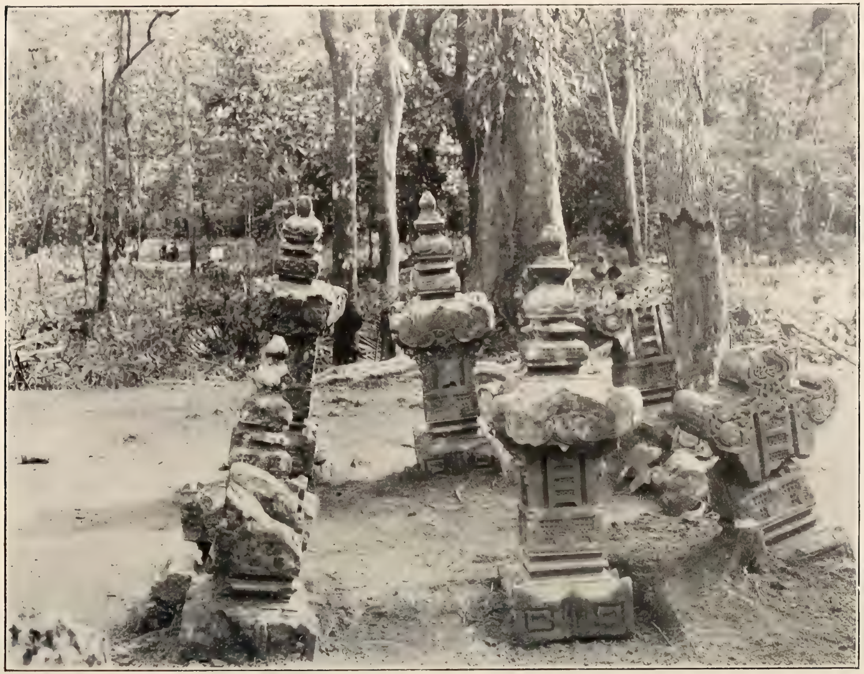
It is certain that Sultan Mahmud was one of the early rulers of Pahang. He is mentioned in the Sĕjarah Malayu, where it is said that the Sultan Mahmud who lost Malacca to the Portuguese married his daughter, and he is also mentioned in the Bustânu-s-salatîn' list of Pahang rajas as being the son of the first raja Sultan Muhammad Shah and himself the fifth ruler. His posthumous title is given as Marhom di-hilir, *i.e.*, the late ruler downriver. If one of the graves is really his, its date would be about the beginning of the 16th century.

There are at least two other old cemeteries at Pekan. The "Makam Nibong" which lies within a few hundred yards of the "Makam Chondong" is also on a platform. There are on this a number of graves but all appear to be female. On one is a clear inscription in Arabic. It is carved however in a lapidary's style which baffles the few persons in Pekan who claim to read Arabic. I could hear no traditions as to the date of these graves or as to their occupants.

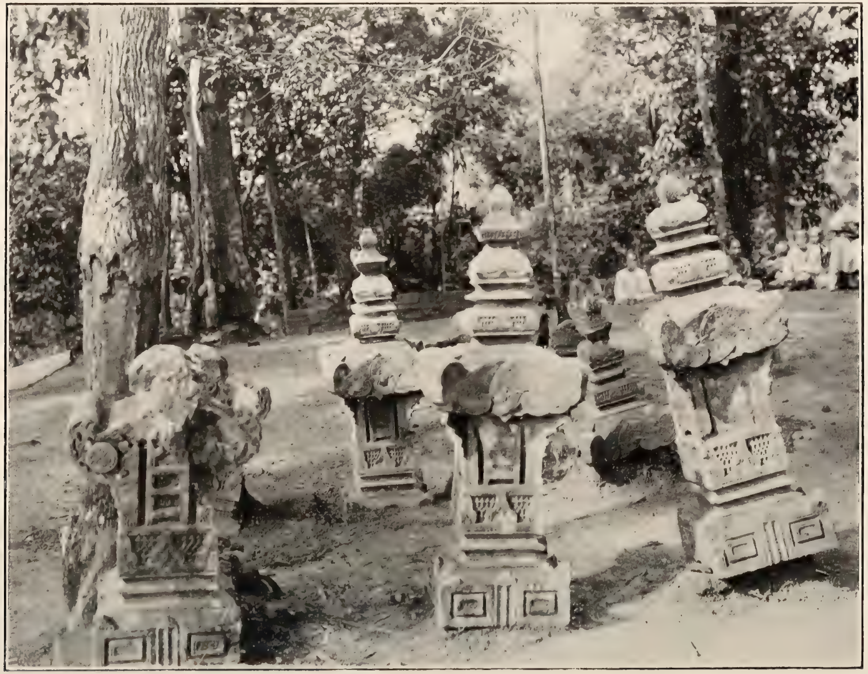
Another well known grave is that called Ziarat Raja Raden. It is near the river bank within the Sultan's reserved area and not far from the Makam Chondong and Makam Nibong. The grave stones are of similar type to those of Raja Fatimah a description of which has already been published in this Journal. An inscription in Arabic which has been read for me consists of praises of God, and a difficult specimen of Arabic writing at the foot of one of the stones was recently determined to contain the name Abduljalil. A local Malay student of history decided that the grave must be that of Sultan Abduljalil of Johore who succeeded the mad Sultan Mahmud Shah II of Johore (Mangkat dijulang) in about 1700 and was himself known as Marhom Kuala Pahang. (see Wilkinson's History pamphlet pp: 53-55). This however is pure guess-work; there is no local tradition on the subject. It may be noted that Raja Raden is the name given by Godinho d'Erédia to Sultan Alaedin Riayat Shah III of Johore, the Sultan who died at Acheen in about 1615. It is therefore a possible popular name for a ruler.



OLD CEMETERY IN PEKAN.



OLD CEMETERY IN PEKAN.



OLD CEMETERY IN PEKAN.

An old Tombstone in Pahang.

By Warren D. Barnes.

(With two plates.)

In May, 1910, His Highness the Tungku Besar of Pahang was visiting Kuala Lipis, and among the presents brought to him by the local Penghulus was a gravestone which was reported to have been found some time previously in the Pahang River near the Penghulu's landing stage at Tebing Tinggi. The stone was carved with an inscription in Arabic characters which baffled the local scholars. A transcription of it was subsequently made by the Mufti at Pekan, Haji Osman bin Senik. It proved of great interest, as the stone was the gravestone of Raja Fatimah who died in A. H. 901. *i. e.* A. D. 1496 or fifteen years before Albuquerque captured Malacca. I propose to give a description of the stone which now lies in the Istana of His Highness at Pekan, and to discuss the identity of Raja Fatimah.

The plates which accompany this paper show the shape of the stone. Its height from its top to the bottom of the carved foot is 22¾ inches; its width across the carved foot 14 inches, and across the face 9¼ inches; its thickness in the thinner portion 5 inches.

The following description has been given me by Mr. J. B. Scrivenor, Government Geologist, Federated Malay States, of a chip from the bottom of it :—

"This is an excellent example of a basic lava. The base is cloudy but is evidently composed to a large extent of felspar microliths. The felspar phenocrysts are fresh and beautifully zoned in some cases. The extinction angles are not very high and point to the felspar being andesine. Augite, almost colourless in section, is common and there is a deep brown, strongly pleochroic mineral with nearly straight extinction that occurs chiefly in prisms with strongly marked black rescrption borders. This mineral is most probably basaltic hornblende, but it cannot be proved from this slide. There is one large crystal of biotite much altered."

"It would be interesting to compare this rock with the gravestones in the Raffles Museum, Singapore. They appeared to me to be of the same nature."

"This rock, which may be called pyroxene-hornblende-andesite, might have come from some outcrop of the Pahang Volcanic Series, but I do not remember seeing anything exactly like it."

May, 1910. J. B. S.

The carving on the stone is surprisingly fresh, and as patches of "jadam" or black varnish still remain visible on the stone itself—they are clearly shown in the photographs—it is probable that the story that it was found in the river is correct. It is in much better preservation than many stones of much more recent date. It appears likely that the whole stone was once covered with black varnish and very possibly the name on it was picked out in gold.

The photographs show:—

A. The whole stone; B. One flat side; C. The opposite flat side; D. One narrow side.

The transcription of the inscriptions as given by our local authority at Pekan is as follows:—

(i) B. The heart-shaped inscription above:—

Al ghafur, meaning The Lord most forgiving.

The inscription below:—"Al-hejrat al-nabi salla Allahu alaihi wa's-salam sembilan ratus sa tahun lima belas hari."

(ii) C. The heart-shaped inscription above:—

Al-jalil meaning The Lord most great.

The inscription below:—bulan shawal malam isnin Raja Fatimah kembali ka-rahmat Allah.

The translation of the two inscriptions is:—

On the eve of Monday the fifteenth day of the Moon Shawal in the year 901 of the Hejira of the Prophet, to whom may God give peace, Raja Fatimah returned to God's mercy.

(iii) D. The heart-shaped inscription above:—

Al-'ala, meaning The Lord most high.

The inscription below:—Arabic words meaning Death is a gate and all men go in thereat.

(iv) On the other narrow side:—

The heart-shaped inscription above:—

Al-aziz, meaning The Lord most powerful.

The inscription below:—Arabic words meaning Death is a cup and all men drink thereof.

(v) On the flat top of the stone:—

Arabic words the meaning of which has not been clearly made out.

The identity of this Raja Fatimah is fairly certain, although the early history of Pahang is not clear. The authorities are the Sejarah Malayu and the Bustânu-al-Salatîn, of an extract from which His Highness possesses a copy. According to the Sĕjarah Malayu (Shellabear's Romanised Edition, 1910, pages 82-86) Pahang with its capital Pura, *i.e.* the city, *i.e.* Pekan, was at one time under the rule of "Siam" and was governed by Maharaja Dewa Sura who belonged to the family of the ruler of that country. This "Siam" was probably not the present Thai Kingdom. It had previously sent an abortive expedition against Malacca which would appear to have followed the well-known route down the Tembeling and the Pahang and up the Bera and Serting over the 'Penarekan' to the Muar.

In reply, Sultan Mansur, who, according to Mr. Wilkinson's "History" pamphlet, 1908, page 24, came to the throne about A.D. 1459, sent a naval expedition against Pahang which captured the country and its ruler as well as the ruler's daughter, Putĕri Wanang Sĕri, whom the Sultan subsequently married. By this marriage he had two sons, Raja Ahmad Muhammad and Raja Muhammad. Raja Ahmad Muhammad was the Sultan's favourite of all his sons and was nominated as his heir. He lost favour, however, owing to the murder by his followers of a son of the Bĕndahara who, when playing "raga," had inadvertently so kicked the ball that it knocked off the Raja's head-dress. The Sultan accordingly banished him to his mother's country of Pahang, of which he had him installed as Sultan under the title of Sultan Muhammad. The new Sultan married the grand-daughter of the Raja of Kelantan and had three sons, Raja Ahmad, Raja Jamil, and Raja Mahmud, and a daughter who married her cousin Sultan Mahmud of Malacca—the Sultan whom Albuquerque ejected in 1511. According to the Bustanu-al-Salatin, Sultan Muhammad was succeeded by his son Sultan Ahmad, who by a non-royal wife had a son Raja Mansur. The Sultan abdicated in favour of this son who married Raja Fatimah the daughter of Sultan Ala'edin Riayat Shah of Malacca who was the son of Sultan Mansur and the father of the Sultan Mahmud just mentioned. I believe that the gravestone found is that of this lady.

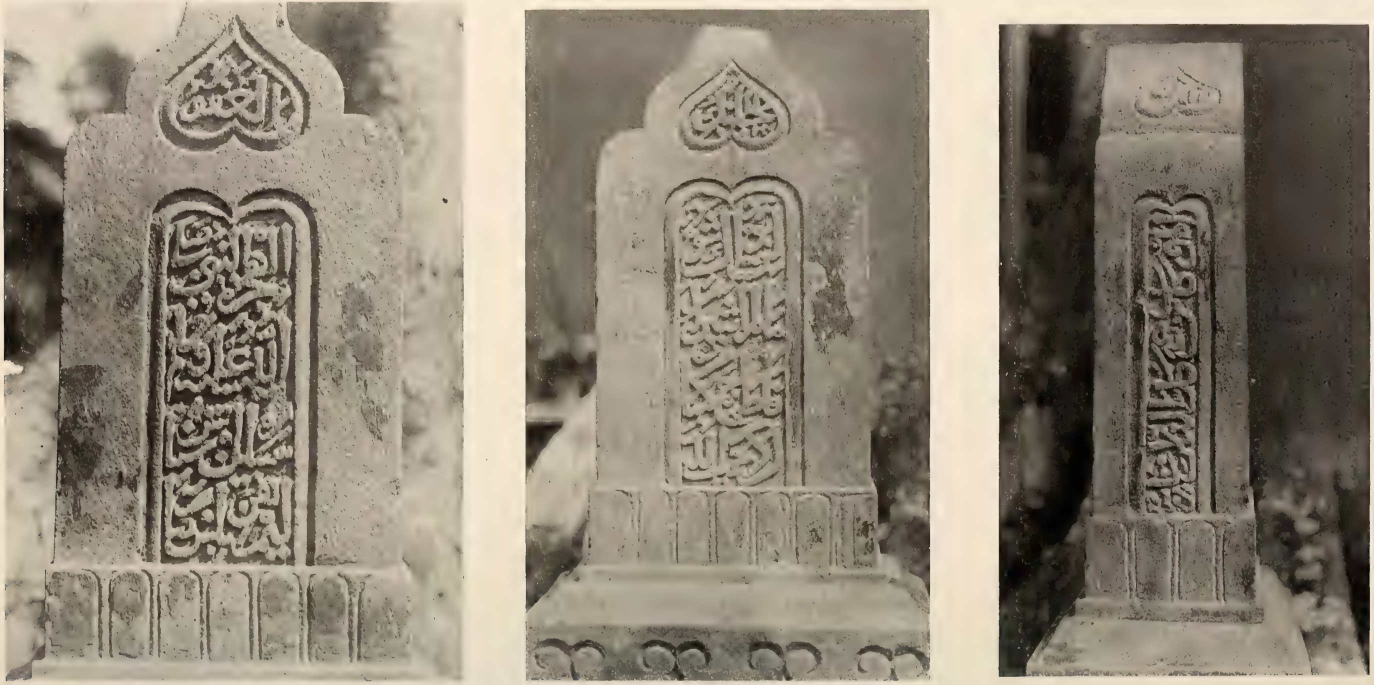
She would appear to have had an unhappy time in Pahang as her husband died without children being "murdered by all his warriors."

His uncle Raja Jamil succeeded and was rapidly followed by the other uncle Raja Mahmud who contrived to establish himself on the throne. He seems to have married a cousin, the daughter of his uncle Raja Muhammad, and his daughter married Sultan Ala'edin Shah of Malacca, Sultan Mahmud's successor.

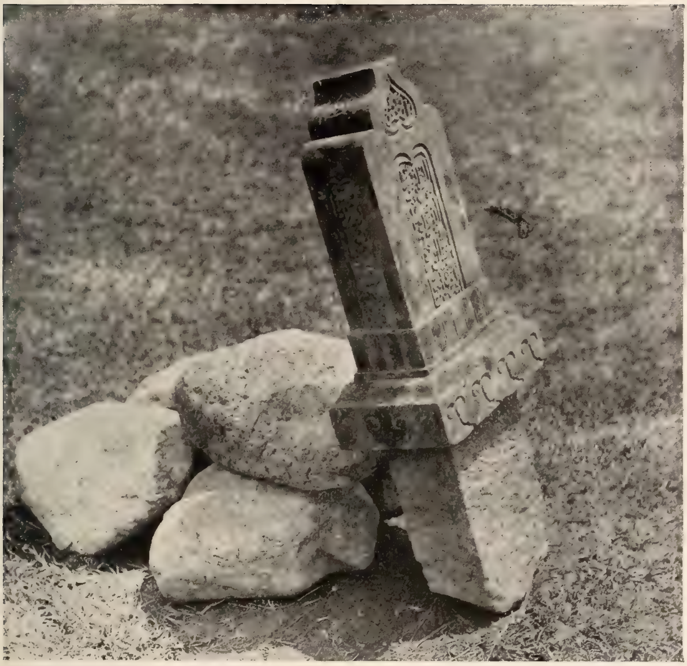
Apparently civil war followed on the death of the first Sultan of Pahang. The omission in the Sĕjarah Malayu of any reference to the murder of Raja Mansur might be ascribed to the author's theory that "Malays never rebel," but other inconsistencies between his account and the detailed genealogy of the Bustânu-al-Salatîn must be ascribed to inaccurate information and confusion between rulers of different generations who bore the same or similar names.

Tĕbing Tinggi, the place where this stone was found, is not known to have been a residence of royalty, but it is not far above Lubok Pĕlang to which, according to the Sĕjarah Malayu, Sultan Abduljamal of Pahang retired after his abdication, and where he is said to have died.

As far as I am aware, this stone is the oldest dated gravestone in the Peninsula.



OLD TOMBSTONES, PAHANG.



OLD TOMBSTONE, PAHANG.

A Trip to a Source of the Sarawak River and Bengkarum Mountains.

By C. J. Brooks.

At the end of September, 1908, I had the opportunity of making a jungle excursion and decided to follow the main stream of the so-called right hand branch of the Sarawak River to its source, cross the watershed to the upper waters of the Sambas River, visit Bengkarum Mountain, and return to Sarawak by Jagnay. As far as I am able to ascertain much of the country I passed through had not been visited by a European, certainly the ascent of Bengkarum Mountain had not been made, this together with the highly interesting botanical collection obtained makes a short account of the trip of sufficient interest to place on record. The start was made from Bidi on the Twenty-first of September, where I engaged eight Dyak coolies to carry necessaries and collecting materials, with a Malay to act as Mandor. The path taken was that over Gonong Tran through the old village of the Krokong Dyaks. Here we stopped for a few minutes to adjust the various loads; this village had two years before been completely abandoned as a bad epidemic of smallpox broke out there: the Dyaks are now returning and a number of new houses are being built on the old site in spite of the insanitary conditions which exist; the hill top having become a perfect midden from the accumulation of refuse dropped through the floors of the houses. I once tried with a ten foot iron probe (used for prospecting) to reach the hard ground but this I was unable to do anywhere in the immediate neighbourhood of the houses. Descending on the further side of the hill and taking the path to the river where the new village has been built, then through undulating country covered with new jungle to the B'down river which we forded, and then following for some hours a belt of old jungle, we finally forded the main stream at Tebang or Pangkaln Gumbang, which we reached at two o'clock. Here is a flourishing Chinese Kampong with several pepper gardens, the situation is extremely picturesque as the houses are interspersed with groups of cocoanut palms and the surrounding country is mountainous and rugged. To escape a heavy shower which commenced just as we arrived I took shelter in a Chinaman's house, my host, with the usual Chinese hospitality offered me a cup of tea; its fine flavour caused me to enquire where he had obtained it, I found that it was of his own cultivation: this is not unusual, many up country Chinese growing their own tea plants. On leaving Tebang our path followed the river in which we had to wade for some distance—the stream was shallow and fast running with large boulders among the Krangan. Here in the clear space between the river banks were flying several specimens of the Leaf Butterfly (Kallima inachus buxtoni, More.) a great rarity in Sarawak; I was fortunate enough to capture two specimens while both of them were at rest; contrary to Wallace's observations in Sumatra they were quite easy to see, for one had alighted on the trunk of a large tree against the sky line, the other on a leaf overhanging the water. The guide missed the path leading from the river, taking us some miles in the wrong direction. The hills were now becoming very steep and following each other in constant succession as the road crosses the ranges at right angles to their direction. At dusk we entered a new clearing for a paddy field; this the coolies hailed with delight as the Teringos house for which we were making could not be far distant; the path where it entered the jungle again forked, which caused some hesitation but on my guide assuring me that either led to a house the choice was immaterial. After climbing a steep hill, the house came in view. In the dusk we could see that it was now a mass of ruins and had been abandoned for some time. Night closed in before we regained the road so that walking was now a difficult matter, becoming a succession of slips and scrambles down the hill: before going far we met a Dyak who was returning home with some bamboos filled with "Ire Noor," the slightly fermented juice of the sugar palm; this the coolies seized even before enquiring the way, which we now learned was only a short distance, and in a few minutes we were enjoying the welcome shelter of a house with rest and food after a tramp of nine hours. The next morning I decided to follow the river to the Teringos falls and if possible further. The river scenery is very beautiful, the banks in places rising in steep or precipitous cliffs covered with luxuriant vegetation, the river bed filled with enormous sandstone boulders breaking it into a series of cascades, in other places almost completely hiding it from view as it flows between them, I collected a number of interesting orchids and ferns, insects were rather scarce: only a few were taken, among them was a specimen of Melanitis zitenius, Herbst. Several others were observed and unlike Melanitis ismene were flying in the bright morning sunshine, their high and strong flight made them difficult to capture. To obtain if possible any interesting specimens of fish which might occur in an upland river, I exploded dynamite cartridges in two of the deep pools but with no result; nothing rose to the surface and a Dyak who dived assured that there were none at the bottom. A succession of minor falls were passed before reaching the chief, of which the total height must be over one hundred feet, it is broken into two cascades about twenty feet from the top: there was little water running now but after heavy rain when a large river is flowing the fall must be a magnificent sight.

The path led to the face of the cliff which formed the waterfall and continued over it by a series of steep ladders, these are of the usual Dyak type, small tree trunks with deep notches cut forming steps. Above the fall the river has excavated a deep valley in the sandstone rock the sides of which are very steep, and the path follows a ledge somewhat below the summit, which in many places is broken by clefts and gullies bridged by battangs. After proceeding for some distance a very heavy storm broke compelling us to return to the house. The houses here are not of the type usual among land Dyaks, as each family has a detached building with a space of a few feet intervening between the houses, but they are connected by the usual bamboo platform—the roofs are extremely high pitched with ordinary flap windows, the internal arrangement is such that the space in front used for paddy pounding, etc., is often separated by a large outer door, thus dividing a house into two separate rooms.

I could learn nothing here of the route to Bengkarum, but most of the Dyaks were certain that from Trebong direction could be obtained, so I decided to proceed thither the following day. As the coolies were rather heavily loaded, I engaged the services of two more Dyaks: after allotting them their packages and starting I was somewhat surprised to see that one had transferred his load which was not a light one to a small girl of about eight years of age, his daughter, she, wishing to pay a call at a house which we should pass, accepted the "privilege" of Dyak women of carrying the men's load. By a short cut we joined the path at the falls and proceeded practically from the place where we had returned the day previously; after walking for little more than an hour we descended the ridge and crossed the stream to a fairly level tract of country surrounded on three sides by mountains: near by in a large open space were several Dyak houses. As the situation was so pleasing and the country promised well for collecting I decided to spend the remainder of the day here; we accommodated ourselves and baggage in the house belonging to the head man. A series of moans from the adjoining house attracted my attention; on entering I found a young woman suffering from a severe colic. I ordered her Dyak friends to apply two bottles filled with hot water and for her immediate relief I administered a tabloid of Warburg Tinct. On returning in the evening I found the patient had not had the bottles of hot water. I enquired the reason and to my surprise learned that they had not yet lit a fire to cook their rice and could not think of doing so before their evening meal, although they had no doubt but that the hot water would be beneficial. It was not long before those Dyaks had a fire lighted and heated the water, before cooking the rice.

I now followed the course of the river in the bottom of the valley which I found to be a splendid collecting ground; my attention was immediately attracted by a beautiful scarlet orchid Dendrobium cinnabarium, growing plentifully on many trees and flowering freely, closely resembling in habit the Pigeon orchid; many other rare orchids and ferns occur here and a large nepenthes of elegant shape; insects were rather scarce, but among the few taken was a fine specimen of Ornithoptera Brookeana.

In a house near my sleeping place were several large jars of salted Durien—the jars being very porous, the juice was oozing out and the scent was almost intolerable, I asked to have them removed and had great difficulty in getting this done as the Dyak owners could not apparently understand how such a luxury can be objectionable. During the evening a number of Dyaks came in to have a chat-chat, each bringing a small present of rice and eggs, I disappointed them when I refused their invitation to stay another night so that they could call their friends together and give a dance in my honour. By means of a boiling point thermometer I took the altitude and found it to be about fourteen hundred feet.

A good start was made the next morning at eight o'clock: the path now descending on the opposite side of the watershed was in some places extremely steep with deep gullies crossed by tree trunks felled so as to form bridges. As the heavy dew of the previous night had rendered them slippery care was necessary in crossing; for some hours we passed through new jungle which had been cleared within the last five years for paddy farming, and after fording a fair sized stream we climbed a ridge of old jungle and followed it for many miles, then descending and crossing an omah we arrived at Kapot at four o'clock. This is a large Dyak Kampong well situated on the bank of a rapid wide flowing river, and judging from the number of large fruit trees and palms growing here, it must have been an old settlement; the houses are all detached as at Teringos and of the same type, which gives it more the appearance of a Malay rather than Dyak Kampong, but the high pitched roofs present a striking contrast to both—all the houses are connected by the bamboo platform. On ascending we were immediately surrounded by a large crowd of Dyaks who expressed undoubted annoyance at our intrusion—my first enquiry was for the Orang Kaya, who at once came forward, and at my request for lodging, shewed us to the head house, which we entered with as many Dyaks following as the house would hold—the general cry was "what do you want?" to which I answered that I am a Tuan from Sarawak, taking a walk to Bengkarum collecting flowers and insects, I am not a government official tax collecting, and after shewing them some of my specimens, they appeared satisfied and most of them left the house, which gave us room to open and arrange our things. My coolies were very frightened at so suddenly coming amongst a strange and somewhat wild people speaking in a dialect which was unknown to them, and stood shivering in their wet clothes half inclined to try and persuade me to take the road home again. After having changed my clothes, and drunk a welcome cup of tea, I proceeded to explore the extent of the Kampong, at one end of which I came upon a large group of Dyaks dividing a fine catch of fish which they had just made and one of which had been previously given to me. The division is made, after removing the viscera, by chopping the fish into small pieces about an inch cube, then on a large mat one cube is placed for each family, and so again and again, until all the pieces have been equally distributed; I counted fifty-three portions, then a further division was made from a vessel containing a most objectionable semi-cooked mass, which I was informed was the viscera. Each recipient having provided himself with a banana leaf twisted into the form of a cup, it was ladelled into these in small quantities at a time. At the finish it was a most disgusting sight to see a number of small children licking out the trough. I noticed that an unusually large number of the natives here were attacked by Corup and many of the women had stained their entire bodies with turmeric root—they state that this cures it, or perhaps only allays the irritation: the women were extremely frightened, and whenever I appeared, beat a hasty retreat, being the first white man they had seen. After my evening meal a large number of the natives came to see me, each bringing a small present of eggs or rice; among them was the Orang Kayah and his wife, the only woman who dared to come near or speak to me during my stay with them: they were both dressed in state costume, which consisted, in the case of the former, of a high crowned military cap with broad band of silver lace and button to match, given to him by the Dutch Government: the lady was wearing a gaily coloured bead cap about eight inches high and tapering considerably, together with a blue cotton jacket, the edges trimmed with beads: we discussed politics which were not considered to be in a very satisfactory condition here, paddy, and many other matters, and I was pleased to learn that Bengkarum or Krum, as it is called here, was at no great distance; and I heard that a Malay who represented the government was resident here and would call upon me in the morning; my visitors stayed until a late hour, I heard them talking long after I had retired to my curtain.

The next morning on descending to the river to bathe, I was surprised to find that the Dyaks of both sexes were bathing in a state of nudity. I understand however, that this is customary among Dyaks who are quite out of contact with Chinese or Europeans. The Malay official called while I was breakfasting, he was very polite, and offered any assistance that he could give me: as the coolies were tired after the long tramp of the previous day, I decided to let them rest, while I spent the time collecting in the neighbourhood, which did not prove very productive. From the summit of a hill I had a splendid view of Bengkarum Mountain which could not be more than ten miles distant. In the evening we had but few Dyaks to visit us, of these, two were men who had been most enthusiastic to accompany me, and had told me they knew the road to Bengkarum; they now explained that the purpose of their visit was to enquire if I really intended to go; if so, although previously having promised to go with me, they refused, and then with a great deal of talk I was given to understand that no one else would, in fact no one did go, there was no road, the mountain was quite unclimable and the place was so full of Antus (spirits) that something unlucky would happen; however, after repeatedly telling them that now I had come so far, if I could not get from this place, I would from another, they withdrew. I was much annoyed at this, and of course the coolies were much upset, half inclined to believe that the Antus had already started some mischief—they spent a very restless night, hardly any of them sleeping. In the morning I interviewed the Orang Kayah, he informed me that this information was in part correct, as the Dyaks here did not extend their excursions as far as this mountain; but from the next village I could most likely get directions and he would send a coolie to take me there. After waiting for some time for the promised coolie, I decided to apply to my Malay friend who immediately directed a Dyak to act as my guide.

We commenced the journey by wading for some distance down the river and then began an extremely trying and severe ascent of Gonong Trebong: the road although good was exposed to a glaring sun at a very steep incline, it was nearly two hours before we gained the top of the ridge on which the house is situated, immediately below it is a spring of deliciously cold water issuing from a crack in the sandstone; the Dyaks told me that however dry the season this spring never fails. This house Lawang is extremely dirty and erected on the top of a very narrow ridge, the rocky sides of which are so steep that the only possible ascent is by ladders for the last fifty feet. We were greeted by a few women and children who directed us to the head house, which was barely large enough to accommodate all the coolies; it was annoying to find that all the men, or any who could direct us, were away in the jungle and not returning till sundown, so that this necessitated a wait until the following day; the view from this house is imposing; on one side of the ridge Mount Bengkarum stands out clearly against the sky, on the other a fine stretch of country as far as the eye could see looking towards Sarawak with ranges of hills in succession. The Dyaks here are a most unhealthy crowd, it was difficult to find a man, woman, or child, who was not affected with some form of skin disease or festering sores, despite the fine healthy situation of the house (which I found to be about two thousand feet above the sea level;) my Malay Mandor told me that he considered it due to the fact that their hill paddy is poor stuff and that they consume the entrails of any animal they kill.

There were a few heads hung in the apex of the roof of the head house and immediately below was constructed a broad shelf on which any youth sleeps who may wish to shew his courage; a conspicuous object in all head houses of this district is the "sekardoo," this is a large hollow wooden cylinder formed from the trunk of the Lune or other fairly light wood, varying from fifteen to twenty feet in length and about two feet six inches in diameter: over one end is tightly stretched a green hide from which the hair has been removed, they are slung at an angle below the floor of the head house, above which the hide covered end projects a few feet the one in this particular house was certainly over twenty feet long and slung so that it was parallel with the slope of the hill. I understood that when beaten it could be heard at Gumbang, a distance of over twenty miles; formerly they were used to warn the district of head hunting raids, they are now going out of use. I was much amused in watching a number of youngsters constructing a head house for themselves, building on slender posts jammed into the crevices of the rocks on the steep side of the hill over which it hung most perilously.

There was no difficulty in finding a coolie to conduct us the next morning although they were not certain of the whole route, this we should learn at an intermediate house. An early start was made; from this altitude a heavy mist on the lowlands presented a somewhat curious effect, all the ridges and hill tops standing out clearly above it and isolated from each other like islands in a sea of white silent billows; about noon we reached a very dirty and dilapidated Dyak house, whence we obtained complete directions to Bengkarum, the way being through varied and hilly country; we soon commenced to ascend the lower slopes of the mountain; at four o'clock we reached Kampong Temong, a large Dyak house on a spur of the mountain; we accommodated ourselves in the head house, a very high awkward structure, but its airy position gave it a decided advantage over the usually low building, in that it was well above the most unpleasant association of a Dyak village, the scent of the pigs! My first visitor was an elderly gentleman who obviously wished to impress us with his importance; this was somewhat suddenly interrupted by the appearance of the Orang Kaya himself, a fine, well made man; he told me on enquiring, that the ascent was an easy matter and that near the top was a large lanko (shelter) in which we could pass the night, as the ascent and descent could not be accomplished on the same day; he also arranged to have coolies ready for me to start the next morning. During the evening the elderly gentleman called, to say that he had decided to go with me and asked what provision we had made for water; as this seemed rather a serious matter, I told him that we could carry enough with us in bamboos; at this he gave a grunt and smile of superiority to which Dyaks at times give way, I found later in the evening that it was his little joke, there was plenty of water on top.

At eight o'clock the following morning all stores were packed and with my friend as guide we commenced the ascent; for some distance we followed a small stream and on its widening out into a good clear pool, I was astonished to see the elderly gentleman who was leading, stop and divest himself of the few clothes he was wearing. At my protest, he answered that it was a good place for a bath and he had not been there for some time. The ascent is steep but nowhere difficult, for a short distance the path is on a ridge formed by a sandstone bed, which has been thrown over at right angles to its plane of bedding. As it is not more than two feet wide and either side is a drop of fifty to eighty feet, the passage across requires careful walking; the lanco was found to be commodious and in good condition, thatched with split bamboo and arranged in the usual manner; here we deposited our baggage and proceeded to the summit, which was only a short distance.

Bengkarum Mountain, from the isolated position of this enormous mass of sandstone, its sudden rise and the long ridge of summit gradually increasing in height to terminate with precipitous abruptness at its eastern extremity is a conspicuous feature in the landscape for a radius of many miles; in plan it is roughly shaped like a capital Y, the two ridges which form the fork bearing towards the west; the ascent was made from the base of the southernmost of these; the summit at this end which is the lower, I found to have an elevation of 3,500 feet. It is a plateau of some width, the surface being very irregular, worn into deep gullies and depressions which in the overgrown jungle was well nigh impossible to travel over; for some distance I followed a small stream which forms the main drainage and flows to the fork, descending in a series of cascades; the banks are rich in filmy ferns and on a nearly submerged sandbank was growing a small fern which proved to be of considerable interest; being a new species which necessitated the formation a new genus. The Dyaks here collect large quantities of teardammar, these trees were very numerous and of large size. As usual at this altitude the ground was covered with Sphagnum, while the trunks and brushwood were also covered with other species of mosses.

As I was about to descend from the edge of the summit the magnificence of the view at once caught my attention; in the foreground was the further limb of the mountain covered with its deep green, the base thrown into deep shadow as the sun declined, while the stream as it cascaded down the mountain side gave life and contour; then beyond was range after range, in many places irregular and broken, lit by the full sunshine and as the distance increased the green gave place to blue with the final haze of the horizon. The conical summit of Mt. Nach could be seen to the south-west well above all intermediate ranges.

While taking my evening meal the elderly gentleman asked for the chicken bones and much to the general amusement scrunched and swallowed them as well as any dog: the body of a small bird which I had skinned he stewed in a long bamboo, adding various herbs gathered in the neighbourhood. Some little excitement was caused by his difficulty in recovering it from the depths of this vessel, as he refused to split it. The night was bitterly cold with rain and wind which made sleep quite out of the question for the coolies, who had no extra clothing and tried as well as they could to keep warm by sitting over the fire, while I in woollen garments was in nearly the same plight. The following morning was spent collecting on the slopes and a fair number of insects were captured before the sky clouded and the whole mountain was covered in mist—which decided me to return to the Dyak Kampong.

As my collections were now in excess of the botanical paper I had brought with me, I resolved to make as hasty a return as possible to Bidi by way of Siluas. The next morning on making our way through the Dyaks paddy field, at the far entrance I came upon a splendid trophy which these Dyaks had erected as an offering to the spirits who guard the growth of their crops; it consisted of small sized wooden models of all the implements they use in agriculture as well as jars, parangs, and the common utensils of a Dyak house. As part of the journey to Siluas has to be taken by water from Pankalu Bobong, I was much disappointed on arriving there to find that the only boat which would hold my coolies and collections had left early that morning; a Malay trader here proved to be an old acquaintance of my Mandor and kindly ordered his son to try and hire one from a Dyak house a few miles distant; after waiting two hours I was only able to procure a small boat capable of holding four people, and as it was uncertain whether another would be procurable for some days, I decided to proceed in it, leaving my coolies to follow as soon as they could.

A fair amount of Coffee is in cultivation here, doing well on the alluvial soil, the trees are healthy and full of berries. At dusk when nearing Siluas we overtook an old Dyak, whom I recognized as having worked for me at Bidi. At his suggestion I decided to stop the night at his house at Ire Lickie, which was convenient for starting the next day; this was a far more comfortable structure than is usual to find Dyaks living in—it had three separate compartments, the best of which was at once cleared for my use, while fresh eggs and rice were offered to me; as there were two other Dyaks beside my old coolie resident in the house I expected to obtain carriers easily the next morning, but on rising my hopes received a check as two of the men were prostrate, with high fever. This they told me was very prevalent in the neighbourhood of this river. After much persuasion I induced the remaining coolie to accompany me to the next village which we reached after two hours walk. This house Teberau consists of one long building and although low, is commodious; the Dyaks are of a type strange to any I had before met; it was more marked in the women who are of short stature and decidedly pretty, in feature akin to Tamil women. Without exception each woman was wearing a small plaited straw cap about six inches in height, tapering slightly, decorated with highly coloured geometric designs; in casual appearance there was little difference between these caps and those worn by the "Bombay" shopkeepers at Colombo. The Dyaks were in rather an excited condition as a Patrol of Dutch police had spent the night here and were at this late hour about to make a start; they were conducting back a Malay prisoner who had escaped from Sambas to Sarawak; here my coolie left me and it was only by promising the exorbitant sum of two dollars each that I could persuade two others to take his place as far as Bidi.

At two o'clock we reached Pankalu Babong; from here the distance was too great to reach Bidi the same day, which was annoying after a comparatively short day's walk. This was a large well built Kampong, the Dyaks, some of them big strapping men, are of the Jaguay type to which tribe they claim kinship although they are Dutch subjects. A great deal of noise was being made in the head house, caused by beating of gongs and gindans. On enquiring the reason I heard that some six months ago they had obtained a head, having been called out by the Government in an expedition against some rebellious tribes at the ulu of the Sambas river; the festivities with which they had feasted the head were still being kept up by the younger members of the house; on inspection I found the head had been divided, having been shared with another house. It was lying in a small shelter which had been made to receive it, containing various offerings placed near it, eggs, tobacco, etc.

At about nine o'clock I was very pleased to see my coolies arrive. They had constructed a raft and were thus enabled to follow me quickly. I could now dispense with my engaged help at my own rate of pay. An early start the next morning brought us to Pangkalm Tipong at one o'clock and to Bidi an hour later.

I should like to conclude by saying a word respecting my excellent Malay Mandor Mahomet who was at all times ready to carry out my wishes and assist in every possible way to the desired end, and to Madoo the best of Krokong Dyaks.

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A List of the more interesting ferns collected at Mount Bengkarum and elsewhere.

Cyathea Sarawakensis, Hooker. Among the rocks by Tringos Falls.

Matonia pectinata, R. Br. This is probably the form described by Mr. Copeland, as M. Foxworthyi. Mt. Bengkarum at 3,500 feet, growing in large masses.

Gleichenia vestita, Bl. Mt. Bengkarum summit.

Nephrolepis acuminata, (Houtt) Kuhn. Mt. Bengkarum at 3,000 feet terrestrial.

Didymochlaena lunulata, Desv. Mt. Bengkarum at 2,500 feet.

Dryopteris calcarata, O. Ktze. Banks of Sarawak River near Gumbang.

,, *penangiana* var. *Calvescene*, Christ. Mt. Bengkarum at 3,000 feet.

,, *mindanaensis*, Christ. Mt. Bengkarum at 2,500 feet.

,, *athyriocarpa*, Copeland. Mt. Bengkarum at 2,500 feet.

Davallia pedata, Sm. Mt. Bengkarum at from 2—3,000 feet. A common epiphyte on trunks. A somewhat unusual form, occuring also at Mt. Penrissen Sarawak.

,, *ciliata*, Hooker. Mt. Bengkarum, epiphytic on trunks at 2,500 feet.

,, *contigua*, Swartz. Mt. Bengkarum at 3,000 feet. A common epiphyte.

Protolindsaya Brooksii, Copel. Genus et spec. Nov. Philipp, Journal Sc. Vol. 5. No. 4. Mt. Bengkarum at 3,500 feet, growing on Sandbank in small stream.

Plagiogyria pycnophylla, var integra, Copel. var. Nov. Philipp Journal Sc. Vol. 5, No. 4. New to Borneo. Mt. Bengkarum at 3,500 feet, growing in large clumps, seldom fertile.

Blecknum Blumei, Moore, or near it. Mt. Bengkarum summit.

Asplenium subaquatile, Ces. Ire Lickie River, on trunks overhanging stream.

,, *persicifolium*, J. Sm. Mt. Bengkarum at 3,000 feet.

,, *trifoliatum*, Copel, Sp. nova. Philipp Journal Sc. Vol. 5. No. 4. On moist rocks in old jungle. Sambas near Tringos.

,, *filiceps*, Copel, Sp. nova. Philipp Journal Sc. Vol. 5. No. 4. Tringos, epiphytic on trunks over river.

Syngramma Hookeri, C. Ch. Mt. Bengkarum at 3,000 feet.

Vittaria longicoma, Christ. Tringos on trunk over river.

Polypodium Zippelii, Bl. Sarawak River Tringos, on shady bank. New to Borneo.

,, *incurvatum*, Bl. Mt. Bengkarum at 2—3,000 feet. A common epiphyte.

Dryostachyum splendens X *Polypodium heracleum*, probably a hybrid of these, see Philipp Journal Sc. Vol. 5 No. 4. Mt. Bengkarum at 3,000 feet. A large clump fallen from a tall tree.

Elaphoglossum petiolatum (Sw.) Urban. Mt. Bengkarum at 3,000 feet. New to Borneo.

The Gymnosperms of the Malay Peninsula.

By H. N. Ridley, M.A., F.R.S.

The three existing groups of the Gymnosperms, Coniferae, Gnetaceae and Cycadeae are represented in the Malay peninsula but not by any means abundantly nor do any form a conspicuous feature in the flora.

The Conifers, more abundant in temperate than in warm climates, are almost confined to the group *Taxaceae*. We have one species of the *Araucarieae*, *Agathis*, and of *Taxaceae* including the group *Podocarpeae*, seven species of two genera, *Dacrydium* and *Podocarpus*.

Now the geographical distribution of these conifers is of some interest. In the forests of the low country up to nearly 1000 feet we have only three species; *Podocarpus Wallichianus*, *P. neriifolius* and *P. polystachyus*, the latter two closely allied. The two first are natives also of Khasiya, and the tropical Himalaya. This section of Podocarps with yew like leaves is widely scattered over the whole of the tropics of both hemispheres descending into colder regions of the south Chile, Australasia, Japan, South Africa.

When we get to the mountain regions we have *Agathis* (*or Dammara*), *Dacrydium elatum*, *D. falciforme* and *D. Beccarii* and the very distinct *Podocarpus cupressinus*, with foliage of two forms very unlike anything in the Indian region. All these occur in Borneo, and in other islands to the east, but are absent from the Himalayan or northern region; one or two do get as far as Burmah and Cambodia, but there they disappear. Thus our conifers appear to have invaded the peninsula from two directions. The lowland ones from the north, the mountain ones from the east. All the latter occur in Borneo also with the addition of two more *Podocarps* *P. imbricatus* Bl. and *P. Teysmanni* and another genus, *Phyllocladus* *P. hypophyllus*, Hook fil.) of which the other known species come from New Zealand, Tasmania, the Philippines and New Guinea. There is one more genus which we might expect to find in the Peninsula, but which certainly has not yet been seen, and that is the northern genus *Pinus* of which one species, *Pinus Merkusii* Jungh. occurs in Tenasserim, Sumatra and Borneo.

In all our conifers except *Agathis* the ovule when ripe is drupaceous and red in colour and these are swallowed and so dispersed by birds. *Agathis* like the pine trees has winged seed that can drift to but a short distance so that its dispersal over the large area it covers must have taken a very long time. It belongs to the group of *Araucarieae* which includes the genera *Araucaria* of South America, Polynesia and Australia; *Agathis* in Australasia and Polynesia and up through the Eastern Malay Archipelago to Penang and *Cunninghamia* and *Sciadopitys* of the Japanese and Chinese region.

CONIFERÆ.

Trees or shrubs usually evergreen, with coriaceous ovate, linear or acicular leaves sometimes reduced to scale leaves. Flowers unisexual usually on distinct trees, Perianth none, Males in catkins of scales bearing two or more anther cells, Females in catkins of scales each bearing one or two winged seeds, or solitary terminal ovules, on a scale leaf. Ovules naked, erect or decurved, winged, when in cones; drupaceous when solitary.

Distribution whole world chiefly in temperate climates.

Leaves ovate, fruit a cone	*Agathis*
Fruit drupaceous, Ovule erect,	*Dacrydium*
Ovule decurved adnate to the scale.	*Podocarpus*

AGATHIS.

Big tree with coriaceous ovate leaves. Male cones cylindric of numerous scales bearing ten or twelve pollensacs, Female cone large more or less globose of large scales spirally arranged imbricate with broad tips. Ovuliferous scale thin and confluent with the scale. Ovules 1 or 2 adn'ate to the scale. Seed 1 compressed winged, albumen fleshy, cotyledons 2.

A. loranthifolia, Salisb. Trans. Liun Soc. VIII. 312. t. 12. *A. rhomboidalis*, Warburg Monsunia I. 184 t. VIII. c. *A. Dammara*, Rich. Conifer 83. t. 19. *Dammara alba*, Rumph. Herb. Ambon II. 174 t. 57. *D. Orientalis*, Lamb. Pin. Ed. 97. t. 54.

A lofty straight-stemmed tree with flaky bark very resiniferous. Leaves in pairs stiffly coriaceous, lanceolate, elliptic lanceolate or ovate obtuse, base very shortly narrowed, 2 to 3 inches long, 1-1¼ inch wide with a decurrent petiole ¼ inch long. Male spike cylindric obtuse, 2 to 2½ inches long. Scales ¼ inch long, oblong, obovate with a straight claw, apex broadly rounded. Pollensacs 10 or 12. Female spike cylindric obtuse 2 inches long. Cone sub-globose, flattened at the top.

Pahang, Gunong Tahan (Robinson). Selangor, Bukit Kutu: Semangkok Pass, track to Sempang mines. Perak Waterfall Hill Taiping (Wray) Common at Maxwells hill and upwards. Penang Hill 2500 feet (Curtis), (Fox 12706) Kedah, Gunong Jerai (Ridley).

Distrib. Malay Archipelago. "Poko Damar Minyak."

Warburg. lc. broke up the *Agathis* of the Malay region into a number of species very imperfectly described. The Malay peninsular one of which he seems only to have seen a specimen from Lambert's collection of doubtful origin, but probably Penang, he describes as *A. rhomboidalis*. The differences in his various species seem to be so slight, and probably either local or due to some slight variation on a branch or tree that I think it inadvisable to adopt them. Specimens from Gunong Tahan differ from the common Malay form in the much thicker and rounder leaves.

DACRYDIUM.

Trees often attaining a great size, unisexual. Leaves acicular, linear or scale-like. Male cones small, scales lanceolate with 2 anther cells. Female flowers solitary on the ends of the branches. The ovuliferous scale broad rounded free, Ovule erect the micropyle pointing upwards. Ripe seed drupaceous small.

Leaves of two forms, in young plants acicular. In adults scale-like.	*D. elatum.*
Leaves of one form acicular	*D. Beccarii.*
Leaves linear falcate	*D. falciforme.*

Dacrydium elatum, Wall. Cat. 6045. Hook. fil. Flora British India V. 648. A big tree 80 feet or more tall and 2 to 3 feet in diameter. Bark reddish brown. Leaves of two kinds. (1). Those on young trees, or shoots of older ones, acicular angled, acute appressed, ⅖ inch long, appressed to the stem. (2). Those on the fertile branches, and on all adult trees, close imbricate scales, very small, 1 m. m. long, dark green, bluntly lanceolate. Trees unisexual. Male cones on short branches ⅛ inch long, cones cylindric, yellowish green, ⅙ inch long, blunt Scales ovate, triangular green with a scarious edge, anther cells globose white Female flowers terminal on the fertile shoots, uppermost leaf (bract) ovate 2 m. m. long above a broader semiorbicular truncate scale. Ovule ovoid, obtuse, obliquely placed on the apex of the shoot, ⅛ inch long and as wide at the base. When ripe bright red.

Common at high altitudes above 2000 feet elevation in the mountains of the Northern part of the peninsula, Pahang, Gunong Tahan (Robinson, 2354 and 5380) Telom (Ridley), Penang Hill (Curtis, 2880), Kedah Peak (Ridley).

Distribution Tonkin, Tenasserim (Fl. Brit.) Ind Sumatra, Borneo, Philippines and Fiji islands.

The tree is known as Ru Bukit (lit. Mountain Casuarina) from its resemblance to a Casuarina. It has long been cultivated in Singapore from Penang hill plants, and there forms a large cone-shaped bush, flowering in June. The locality "Singapore Schomburgk," given in the Flora of British India is from one of these garden plants. The young tree till it is about 14 feet tall, has only the needle like leaves, and is very handsome resembling a young spruce fir; full grown trees have only the scale leaves, except where pruned on the old wood when they produce branches of acicular leaves.

D. Beccarii, Parl. Dec. Prodr. XVI. 2 294 Pilger, lc. 52.

A dwarf bushy tree about 15 feet tall or less, leaves all acicular, half-an-inch long in barren stems, $\frac{1}{4}$ inch long in fertile branches, angled and groved. Male cones not yet known. Female flowers ovule ellipsoid, ovoid, blunt, $\frac{1}{8}$ inch long, one or two on a short branch with numerous short acicular leaves.

Malacca, Mt. Ophir (Hullett, Ridley 3155) Perak, Bujong Malacca at 4000 feet (Curtis 3302) Selangor, Mengkuang Lebar at 5800 feet (N. Dennys) Also Borneo on Mt. Poe (Beccari. Foxworthy.)

A very distinct species in its dwarf habit and absence of any scale leaves. The ovules are much bigger than in *D. elatum*. It seems to take the place of this latter in the southern part of the peninsula.

D. falciforme, Pilger. Pflanzenreich IV. 5 *Taxaceæ* 45 Pl. 4 *Podocarpus falciformis* Parl. Dec. Prod. XVI. 685.

A big tree with dark colored bark leaves, distichous, obliquely linear sigmoid coriaceous, flat, acuminate, mucronulate, midrib grooved, inconspicuous, 1 to $1\frac{1}{2}$ inch long $\frac{1}{4}$—$\frac{3}{8}$ inch wide. Male cone cylindric half-an-inch long, scales very small, ovate acute, or cuspidate. Female flowers forming a very short branch, scales numerous, triangular, acuminate, keeled, ovule 1 terminal, pedicel very thick, concave above the base, when further advanced the branch becomes thicker and the scales fleshy.

Selangor, Semangkok Pass towards the Sempang mines (Ridley 12068). Also in Lingga island on Gunong Dai at the foot of the hill up to 1000 feet (Hullett 5695) and in Sarawak top of Mt. Matang (Ridley 11669) and reported from the Philippines.

I have seen no female flowers. The tree attains a height of about 80 feet with a trunk girth of 10 to 12 feet.

PODOCARPUS.

Trees usually unisexual. Leaves of one form ovate, acuminate, or linear, or of two forms acicular and linear, distichous on the same branch. Male inflorescence a catkin, scales numerous, lanceate, acuminate with 2 anther cells. Female flowers solitary, axillary or several in a short raceme. Bracts one or more forming a fleshy peduncle. Ovule adnate to the ovuliferous scale, reflexed with the micropyle below, Seed large or small, globose or ovoid, drupaceous, red or purple on the thickened fleshy peduncle. Species 40 Tropical and south temperate regions of both hemispheres.

Leaves all similar ovate	*P. Wallichianus.*
Leaves all similar linear	
Male spikes solitary or in pairs	*P. neriifolius.*
Male spikes numerous	*P. polystachyus.*
Leaves dimorphic	*P. cupressinus.*

P. Wallichianus, Presl. Bot. Bemerk. (1844) 110 Pilger Pflanzenreich p. 59. *P. latifolia* Wall. Pl. As. rar. 26 t. 30 (non Thunb) Parl. Dec. Prodr. XVI. 2. 508.

A medium sized tree with opposite or sub-opposite leaves, the pairs inch apart, the leaves are coriaceous ovate or lanceolate ovate, caudate, acuminate, narrowed at the base, 4-7 inches long, $1\frac{3}{4}$-$2\frac{1}{2}$ inches wide. Flowers male and female on the same branch 5 to 9, the males at the top. Male spikes crowded about 6 together on a peduncle about an inch long with several bracts at the base of the spikes. Spikes white nearly cylindric, about $\frac{3}{4}$ inch long, anthers very numerous, scale acuminate (ensiform cuspidate) cells elliptic 2. Female flowers solitary on peduncles as long as those of the males on a thickened fleshy receptacle, bearing about 6 short leaves. Fruit large globose, half an inch through, purple.

Singapore near Changi and Krangi: Johor Mt. Austin; Bukit Soga (11223 Ridley): Negri Sembilan, Gunong Angsi: Dindings, Gunong Tungul; Perak, Kinta (Wray.)

Distrib. India, Burmah, Sumatra Sungei Kelantan.

I have never been able to find a full sized tree or fruit or flowers of this plant. Wray's specimen has however, traces of fruit. It occurs in lowlying deep and dense forests in the plain country. The description of flowers and fruit is taken from Wallich's figure and description.

P. neriifolius Don Lamb. Pin. Ed. i 21 Parl. Dec. Prodr. XVI. 2. 514 Pilger Pflanzenr. lc. 80. *P. bracteata* Bl. Enum. Pl. Jav. 88 Rumphia III 214.

A very variable tree from 60 to 100 feet tall. Leaves coriaceous, linear, long and gradually acuminate, 4-6 inches long by $\frac{1}{4}$ to $\frac{1}{2}$ inch wide, gradually narrowed to the base, petiole $\frac{1}{8}$ inch long or less. Male spikes short, half-an-inch long rather thick, solitary or two together on short peduncles with several short, ovate, thick polished scales at the base. Anthers crowded densely with a short point. Female flowers solitary or in pairs axillary on the upper axils of the branches, pedicel $\frac{1}{10}$ inch long, receptacle cylindric, rather longer, ovule ellipsoid.

Usually on hill forests from 1000 to 5000 feet alt. and very variable in height and form of leaf.

Johor, Bukit Banang, Batu Pahat (Ridley 11192). Immense trees over 100 feet tall and thick in proportion. The leaves I got of this are 6 inches long by ¾ inch wide, broadly linear and abruptly acuminate at the tip. No flower procurable.

Pahang, Gunong Tahan (Robinson 5452) at 5-6000 feet. A form with very thickly coriaceous leaves rather narrow. Malacca Mt. Ophir, Padang Batu (3158 Ridley and 10016) 3000 feet alt. Moderate sized tree with stiff leaves resembling specimens from Nepal (Wallich). Selangor, Bukit Hitam (Kelsall 2000) Penang Government Hill, (Curtis 3079) and Balik Pulau, a tree about 50 or 60 feet with thinner and in adults rather shorter leaves, resembles a plant from Tayabas, Luzon (Merrill 1992.)

The distribution of this species is recorded by Pilger from Nepal and Khasiya, China, Java, Sumatra, Borneo, Celebes, Batchian, and New Guinea.

P. polystachyus, R. Br. Mirb. Mem. Mus. XIII. 75. Bennett Horsf. Pl. Jav. 40. Parl. Dec. Prodr. XVI. 515. Pilger lc. 79.

A rather short much branched tree about 20 to 40 feet tall, with flaky bark. Branches spreading sub-whorled densely leafy at the tips. Leaves lanceolate, linear, narrow, narrowed at the tip and still more at the base, blunt, coriaceous, dark green, with a prominent midrib, 3 inches long, ¼ inch wide, petiole $\frac{1}{10}$ inch long, trees unisexual. Flower spikes male, very numerous, crowded in axillary tufts, yellow, 1-1½ inch long, ⅛ inch through, anthers densely crowded. Female flowers several together or solitary in the axils of the upper leaves, peduncle very short, $\frac{1}{10}$ inch long, receptacle swollen, cylindric, ¼ inch, with a longitudinal groove and a single short, conic, acute leaf. Ovule club-shaped. Ripe seed red, ¼ inch long, ellipsoid.

Common in mangrove swamps; Singapore Kranji, Changi (Ridley 165) Serangoon (3367); Pahang, Rumpin river and Kwala Pahang (Ridley 1441); Johor. Also in Sumatra.

Native name S'tada, Sintada.

A curious form from the Changi beach No. 6001 of my collection, has longer leaves, 6 inches long and ½ inch wide with very slender spikes 1 to 2 inches long with remote anthers.

Podocarpus cupressinus, R. Br. Mirb. Geogr. Conif. in Mem. Mus. XIII. 75. Bennett. R. Br. Pl. Jav. rar. I. 35 t 10. Blume Rumphia III. 218 t 172 f. 2, 172 B. f. 2. Parl. Dc. Prod. XVI. 2 521. *P. imbricatus*, Bl. Enum. Pl. Jav. 89. Pilger lc. 56.

A tall tree about 60 feet high rather straggly in forest, forming a compact cone-shaped tree when in the open, much branched. Bark smooth on the branches, reddish brown, flaking off here and there on the trunk. Leaves of two forms (1) on the branches linear terete, decurrent, mucronate, $\frac{1}{8}$ inch long, appressed, or at length longer with a broader base and more flattened, dark green. (2) leaves on terminal shoots distichous, flattened, $\frac{1}{4}$ inch long, mucronate, glaucous, green. Trees unisexual, male cones axillary on the branchlets below the terminal distichous leaves, on a peduncle $\frac{1}{10}$ inch long, covered with short subterete leaves, cone cylindric, obtuse $\frac{3}{8}$ inch long. Antheriferous scales about 40, lanceolate, acute, with 2 ovoid globose yellowish white anther cells. Females. Ovules solitary borne on the ends of short branches, $\frac{1}{4}$ inch long, covered below with very short thick, mucronate leaves, those at the tip surrounding the flower longer, $\frac{1}{8}$ inch long. The ovule is supported on a yellow papillose peduncle bearing two or three terete slightly clubbed fleshy leaves. The ovuliferous scale is adnate to the decurved ovule which is reddish brown and $\frac{1}{8}$ inch long. The ripe seed is very small and bright red.

On hills from an altitude of about 1000 feet and upwards.

Johore, Gunong Pulai (3716 Ridley). Selangor, Bukit Hitam (Kelsall 1984), Semangkok Pass (Ridley 8635, Burn Murdoch 11964). Pahang, Kluang Terbang (Barnes 10907). Penang Hill (Curtis). Kedah Peak (Griffith).

Distrib. North Burmah, Hainan, Sumatra, Java, Borneo, Celebes.

The tree flowers more or less most of the year, but chiefly in June. Though never met with at a lower elevation in a wild state than 1000 or 1500 feet, it grows very readily in Singapore, where it forms a very handsome bushy tree.

GNETACEÆ.

The *Gnetaceæ* comprise three genera now existing extremely dissimilar, of which the only genus in our region is *Gnetum* of which there are upwards of twenty species distributed over tropical Asia, Africa one species, Polynesia one and South America.

All our species but two are stout woody climbers. One *Gnetum Gnemon* L. is a tree of some size, the other a small shrub, *G. Brunonianum* —*G. Gnemon* known in the peninsula as Maninjan is occasionally to be seen in Singapore and more abundantly in Penang in gardens where it is more or less planted for its pleasantly tasted nut-like seed. It is not a native of this region but is said to have been introduced from Java. It is given in the Flora of British India (where however it is confused with the very distinct *G. Brunonianum*) as a native of Khasyia and Munnipore. It attains a height of about fifty feet and a diameter of trunk about 6 inches or more.

The climbing species generally attain a great size and form often conspicuous lianes in the forests. The bark is tough and used for tying by the Malays.

GNETUM.

Woody climbers, or rarely erect trees or shrubs unisexual. Leaves opposite, coriaceous, ovate, lanceolate or oblong, penninerved petiolate. Inflorescence spikes of circular saucer shaped bracts containing sessile flowers usually surrounded by multicellular hairs, spikes solitary or panicled axillary or terminal. Male flowers minute of a tubular clubbed perianth and a single stamen with two celled anther. Female flower of an ovoid or globose ovule, the inner tegument prolonged into a slender exserted tube. Seed thinly drupaceous, pink or red.

Species about Pacific-islands, Malay Archipelago and Peninsula, Northern India, Africa and South America.

A big tree, *G. Gnemon.*
A low shrub, *G. Brunonianum.*
Woody climbers

Seed sessile, not narrowed into a stalk at the base, spikes simple.

Seed blunt at both ends

Spikes long. Seed half an inch long. *G. microcarpum.*
Spikes stout, very woolly. Seed half an inch long *G. macrostachyum.*
Spikes slender not woolly 6 inches long.
Seed 1 inch long *G. penangense.*
Spikes a foot long whorls distant *G. longispica.*

Seeds few, large, acute at the tip, brown, corky *G. edule.*

Spikes branched.

Seed 2 inches long fusiform *G. latifolium*

Seed stalked.

A stout woody climber *G. funiculare.*
A slender climber with thin leaves *G. tenuifolium.*

GNETUM.

TREES.

Gn. Gnemon, L. Mant. 125. A big tree known in the Straits as "Maninjau" cultivated occasionally in Penang and Singapore and said to be introduced there from Java. The seeds are eaten and taste like hazelnuts.

G. Brunonianum, Griff. Lindl. Veg. Kingdom 233. Trans. Linn. Soc. XXII. 308 t 55 fig 9-20 and t 56, 27, 28, 41, 43, 44—47. Notulae 30 Kurz Flora LV 349. *G. Griffithii* Parlat. Dc. Prodr. XVI ii 349, 352.

A low erect shrub 2-5 feet tall, rarely much bigger, stem slender, pale green. Leaves lanceolate to oblong lanceolate, thinly coriaceous, base cuneate, apex acuminate, drying pale, nerves about 10 pairs, thin elevate beneath 4-6 inches long, 1-2¼ inch wide, petiole ⅛-¼ inch long. Male spikes in axillary pairs, peduncles ¼ inch long with a pair of connate, subulate bracts, ⅒ inch long, pedicel shorter, spikes slender cylindric ¼ ¼-½ inch long glabrous with a pair of subulate, connate bracts at the base. Cupular bracts rather remote, flat orbicular, bearing a mass of short hairs in which are imbedded the male flowers mixed with some females. Perianth short, broad, entire, oblong, half as long as the filament, anther cells globose. Female spikes longer, peduncle ½-¾ inch long, subulate, bracts free to the base, whorls of ovules ⅛ inch apart or less in a spike of 1 inch long. Cupular bract rather broad ribbed. Ovules acuminate about 6 in a whorl of which only 2 or 3 develop. Ripe seed ellipsoid half-an-inch long, red.

G. Gnemon, besides being a big tree has much shorter spikes, the whorls closer set together, and thicker, the male flowers larger, with broader flattened perianth tube widely dilated upwards and laciniate at the tip, the anthers are larger, somewhat oblong and separate above. I do not think that in the male trees the female flowers mixed in the whorls ever develop.

Distrib. the whole peninsula and Borneo, originally collected by Griffith at Banlau in the Mergui islands; Johor, Gunong Panti (Ridley); Malacca, Ayer Keroh (Ridley 10752), Mt. Ophir (Hullett 767, 808; Ridley 3156 3157) Bukit Bruang (Derry 441, Goodenough 1338), Sungei Ujong (Cantley); Pahang Tahan river (Ridley 2330 5824), Kwala Tembeling; Telom (Ridley 13708). Selangor, Sungei Buluh (Ridley 13352) and Kwala Kubu. Perak Maxwell's Hill (Ridley 2783). Penang Government Hill at the Chalet (Curtis 878), Borneo, Sarawak, Matang (Hullett and Ridley 12272), Serudang (Haviland), Puak (Ridley.)

This little shrub which is not rare all over the peninsula in hilly forests up to an altitude of about 4000 feet has been confused with *G. Gnemon* L. in the Flora of British India from which it differs notably in its size, the latter being a tree of 60 feet or more tall with deep green leaves and longer spikes and larger fruit, while G. *Brunonianum* is a quite small shrub with pale green leaves and shorter spikes besides other differences in the flower.

It is called by the Malays Poko Ekor B'lankas (King crab's tail) and Pantat Ulat from the appearance of the male spikes. The fruit is sweet and eatable. There is some variability in the leaves, those of the Penang plant being unusually narrow and lanceolate. The venation varies too, in many plants, the nerves are fewer and form very conspicuous extra marginal loops.

Climbers, seeds sessile.

Gn. microcarpum, Bl. Rumphia IV. 6. t 175 and 1.

Rather slender woody climber, stems occasionally as much as half an inch through, with rough dark grey bark. Leaves lanceolate, cuspidate, acute, more rarely oblong, base narrowed or rounded, coriaceous, dark shining green, drying brown, 2-4 inches long, 1-2 inches wide, nerves 6-8 pairs, not conspicuous inarching close to the margin, reticulations rather wide moderately conspicuous, petiole $\frac{1}{4}$ inch long. Male spikes in tufts on the stem, simple, cylindric, $\frac{1}{4}$ inch long on shorter peduncles, cupular bracts cylindric, short, glabrous. Perianth oblong, truncate, flat, narrowed towards the base, apex blunt, entire. Stamen twice as long, filament slender, anther 2 celled club shaped. Female spikes in tufts from the stem, 1 inch long on pedicels, $\frac{3}{4}$ inch long or less with ovate, acuminate, acute bracts, connate at the base. Cupular bracts cup shaped but rather flat ribbed, whorls $\frac{1}{10}$ inch apart of 5 or 6 sessile conic subulate. Ovules surrounded by a circle of short rusty brown hairs, a little longer than the bract. Fruit half an inch long, cylindric elliptic, sessile, pinkish flesh color, borne on spikes 2-3 inches long.

There are two forms of this plant, one a slender twining climber with narrow lanceolate leaves which grows abundantly in open places in secondary scrub which might be called *campestris* and a stronger lofty climber with a stout stem half an inch or more through, and broad elliptic leaves with a rounded base, 2 inches wide. var *sylvestrins*

var *campestris.*

Distrib. Singapore, Kranji (Ridley 5360), Changi (5863), Tanglin etc. Johore, Batu Pahat (Ridley 11219). Pahang, Kwala Pahang (1440.) Malacca, Mt. Ophir, Padang Batu (Ridley 10015), Ayer Panas (Goodenough 1560), Penang Government Hill (Curtis 877), and Batu Feringi (1109). Selangor Sempang mines.

var. *sylvestris.*

Singapore Garden, Jungle; Seletar (Ridley 3958), Bajau (5864) and Pulau Tekong (5862.)

It is known as "Akar Jullah" by the Malays.

Blume's figures and description of *G. neglectum* and *G. microcarpum* are hardly sufficient to distinguish the two species. Hooker refers this species to his *neglectum* with a? Judging by the colour of the seed, and its size and length of spike, I have little doubt that Blume's *G. microcarpum* is intended for this species. *G. neglectum* is figured with larger seed on six inch spikes of a dark claret color, instead of the flesh coloured pink of *microcarpum*.

Gn. macrostachyum, Hook fil. Fl. Brit. India V 642.

A stout woody climber with rough brown lenticellate bark. Leaves stiffly coriaceous. elliptic or elliptic lanceolate, shortly cuspidate, blunt, base rounded, or occasionally shortly narrowed 7-8 inches long, 3-4 inches wide, usually drying light brown, nerves nearly invisible above, slender, slightly elevated beneath, 4-6 pairs, reticulations fairly visible rather large and irregular, petiole rather thick, ¼ inch long. Male spike (only seen young) 2½ inch long on a short peduncle, ⅛ inch long with a pair of ovate, acute, connate bracts, cupular bracts saucer shaped close together with much brown hairs between. Female spikes solitary or in pairs, one in each leaf, axil very shortly peduncled, cylindric, 3-4 inches long, ½-¾ inches wide, cupular bracts close set, saucer shaped, almost hidden in the dense brown wool surrounding the ovules of which it conceals all but the tip. Ripe spike about 4 to 6 inches long and ¾ inch through, densely woolly. Seeds crowded, oblong, ovate, shortly acute, half an inch long, a quarter of an inch through.

Singapore, Siglap (Ridley 9207), Changi (4822 and Hullett) Jurong (Ridley 5566) and Bidadari (8918); Malacca, Bukit Bruang (Ridley); Prov. Wellesley, Krian (Ridley 9383).

Gn. penangense n. s.p.

Woody climber, Leaves elliptic to oblong cuspidate, coriaceous, drying black, nerves 4-5 pairs, base shortly narrowed, reticulations fine conspicuous beneath, 6 inches long, 2½ inches wide, petiole half an inch long. Spike in fruit from the stem stout, 6 inches long, peduncle 1 inch long, whorls ¼ inch apart of about 6 ovoid acute ovules. Cupular bracts flat saucer like, a thin square mat of hairs below the ovule, and shorter than it. Ripe ovules oblong, 1 inch long, blunt at both ends.

Penang Government Hill (Ridley and Curtis 2223).

Allied to *G. microcarpum* but with the leaves of *G. funiculare* and very much larger spikes and ovules.

Gn. longispica n. sp.

A woody climber ¼ inch through with warty bark. Leaves broadly lanceolate, narrowed almost equally at both ends, coriaceous, drying light brown, 6 inches long by 3 inches wide.

nerves 6 pairs inarching within the margin, reticulations small and inconspicuous, petiole stout, half-an-inch. Mature female, spikes a foot long with 24 whorls, ¼ inch apart, peduncles 2 inches long, cupular bracts, saucer shaped ribbed, containing about 10 acuminate ovules almost concealed by thick brownish hair. Ovules little over half-an-inch long, ellipsoid, blunt at each end, without covering ⅝ inch long.

Selangor, Camphor forest, Rawang. Fruits dull brick red, (Ridley). Johor Kwala Batu Pahat, (Kelsall).

Allied to *G. microcarpum*, but with much longer spikes. The fruit of the Batu Pahat plant is larger than that of the Rawang, one being ¾ inch long. The fruit otherwise resembles that of *G. microcarpum*. It may possibly prove to be a big form of that species.

Seed narrowed at the base not stalked.

Gn. edule, Bl. Nov. Pl. Fam. 31 V. 7. Rumph IV. 6. *Funis gnemoniformis*. Rumph Herb. Ambon.

A moderate sized woody climber, with reddish bark. Leaves stiffly coriaceous, shining lanceolate or oblong lanceolate, cuspidate, drying brown above, reddish brown beneath, nerves inconspicuous, 7 pairs, slender inarching within the edge, but almost invisible, reticulations obscure, very small, giving the under side of the leaf a papillose appearance under the lens, 5-6 inches long, 1½-2½ inches wide, petiole ¼-½ inch long. Male spikes not seen. Female spikes solitary axillary on short ¼ inch, peduncles 5 inches long, whorls ⅛ inch apart, rachis ribbed, cupular bract very short, and flat saucer shaped, with light brown hair longer inside. Ovules acuminate 4 or 5 in a whorl. Seed when ripe one or two only on the spike, 2 inches long, an inch through, elongate, ovoid, slightly narrowed at the base and bluntly, shortly acuminate at the tip, light brown corky warty, peduncle much thickened woody. Apex of seed acute, ribbed with many rather long fibrils.

Singapore, Toas, and Chan Chu Kang, (Ridley 6126). Pahang, Tahan river, (Ridley 2329), Pulau Rumput, Pahang river (2332). Perak, Sungei Kertai, Temengoh (14548).

G. edule, Blume was based by him on Rumphius figure and description of his *Funis gnemoniformis*, which shows the solitary seed of large size nearly sessile, and described by Rumphius as "*Coloris hepaticæ*" liver-coloured which fits this plant. Roxburgh referred this plant of Rumph to the Indian species *Gnetum scandens* which is described as having a fruit as large as a large olive and which according to Wight's figure in the Icones Pl. 1955 under *Gn. funiculare* is utterly unlike our species or Rumph's figure. *G. scandens* Roxb. seems to be confined to India. Blume however, included Roxburgh's *G. scandens* in his description.

Spikes branched.

G latifolium, Bl. Rumphia IV 5. Tab. 174.

A moderate sized climber with oblong lanceolate leaves, deep green, drying black, apex acuminate, blunt, base cuneate, (the leaves are often at least slightly inæquilateral) nerves about 8 pair, visible above, prominent beneath as are the reticulations, 5-6 inches long, 2-3 inches wide, petiole ¼ to nearly ½ inch long. Male spikes cylindric, usually 5 together, 1 to 1½ inch long. Bracts saucer shaped, green, approximate. Perianth wedge, shaped with a broad top nearly as long as the filament, anther cells separate. Females 2 or 3 in a tuft from the trunk, branched with few lax branches, spreading, whole inflorescence 6 inches long. Branches about 6, remote, over an inch apart, peduncles of spikes 1¼ inch long, spikes 2 inches long, whorls distant ⅛ inch apart, glabrous. Bract funnel shaped. Ovules 6-7 in a whorl ovoid, not beaked. Ripe seed on a spike a foot long, rachis much enlarged and thickened, zigzag seed 2 inches long, fusiform base abruptly narrowed into a cylindric stalk ¼ inch long, apex bluntly conic.

Pahang Telom (Ridley 13709) on a fallen tree by the stream.

Distrib. Malay islands.

Blumes' figure is an excellent one and exactly suits the Telom plant.

A specimen distributed by the Philippines Bureau as *Gn. latifolium*, Bl. from Lamao River, Mt. Mariveles 1805, closely resembles this in foliage and inflorescence but the fruit is smaller and distinctly stipitate.

Species with fruit stalked.

G. funiculare, Bl. Nov. Pl. Fam 32. Ann. Sc. Nat. Ser. 2. V. 2. 106. Rumphia IV 7. *Abatua indica* Lour. Fl. Cochinch. 630. Hook. Fl. Brit. Ind. V. p. 642.

A very stout woody climber with black bark, stem 2 inches through. Leaves thickly coriaceous, dark green, drying black polished oblong to lanceolate, oblong or ovate oblong, cuspidate or blunt, nerves 6 or 7 pairs, 5 to 6 or 7 inches long, 2½ to 3 inches wide; petiole ¼-½ inch long. Male spikes stout, cylindric, 1 inch long, densely crowded on knots on the trunk on pedicels half-an-inch long, green with yellow stamens. Cupular bracts overlapping circular, saucer shaped, containing abundance of brown multicellular hairs about as long as the bract. Perianth elongate, goblet-shaped from a narrow base, apex broad, ⅔ the length of the stamen. Stamen with a stout filament and 2 distinct globose cells. Female inflorescence of opposite pairs of pedunculate spikes on main peduncles, over on inch long. Bracts connate at the base, subulate, ⅛ inch long. Secondary peduncles $\frac{1}{4}$ inch long, spike $\frac{3}{4}$ inch long. Bracteoles funnel shaped, wide. Ovules ovate, acuminate, 6 in a whorl, surrounded by a dense tuft of brownish hairs. In fruit the spikes are 6 inches long. Seed ellipsoid, blunt at the tip, half-an-inch long, and nearly as thick, red on a stalk, $\frac{1}{4}$ inch long.

Distrib Singapore Garden Jungle (8074 Ridley), Kranji (Ridley 1612 and Tanglin 5688); Johor, Batu Pahat (Kelsall); Pahang, Tahan forests (Ridley 2329); Malacca, Ayer Keroh. (Ridley 107561), Selandor (Cantley) Negri Sembilan, Bukit Danan (Cantley) Selangor, Ulu Gombak (Burn-Murdoch). Perak the Cottage, Taiping Hills (with very small leaves); Penang, Government Hill (Curtis) by the Waterfall (3660).

It is also recorded from Assam, Pegu and Burmah in the Flora of British India.

The Natives call it " Akar Tutubo " and Akar Suburus.

Gnetum tenuifolium, n. sp.

A slender climber turning over bushes, Leaves opposite, oblong, lanceolate, acuminate, with usually a long point, thin textured, narrowed at the base, nerves 6-8 pairs elevated beneath, interarching well within the margin, reticulations inconspicuous, 4-7 inches long, 1-2$\frac{1}{4}$ inch wide, petiole $\frac{1}{4}$ inch long. Male spikes solitary or 2 together on the stem unbranched, on peduncles, 1 inch long, slender with a pair of connate acuminate bracts $\frac{1}{10}$ inch long, pedicel of spike $\frac{1}{2}$ inch long, slender, spike slender, 1 inch long, $\frac{1}{8}$ inch through. Female spike solitary on a shorter and thicker peduncle, unbranched, 2-3 inches long, ovules in whorls of 8 to 10 $\frac{1}{8}$ inch apart, surrounded by short brownish hairs with a cup shaped bract below. Seed spikes 4 inches long. Unripe seed acuminate and when dry narrowed at the base, ripe ellipsoid with a short acute point on a pedicel half an inch or more long, slender, seed ellipsoid acute, finely ribbed, half-an-inch long.

Lankawi (8341). Kasum (Curtis 3244). This also occur in Malacca at Bukit Sadanen (Goodenough 1431) and Bukit Tampin (Goodenough 1918) Selandor and Chabau (Cantley), Negri Sembilan on Gunong Angsi (Ridley): Selangor at Kwala Lumpur (Ridley 10213), Pahang, Tanjong Antan (2331 Ridley); Perak, Taiping (Ridley 14565); the Dindings on Gunong Tungul; Penang Waterfall stone quarry (Curtis) and Balik Pulau (32204) Kedah at Yan.

It is known as Akar Putat, and Akar Dagun and Akar Mantadu in Malacca and Negri Sembilan according to Cantley's collector who says that the Jakuns eat the fruits.

It is a very distinct plant in its thin twining stems only $\frac{1}{8}$ inch through and long pedicelled fruits and thin leaves.

CYCADEÆ.

Shrubs or small trees with a thick simple or branched trunk with a terminal crown of leaves. Leaves pinnate or bi-to tri-pinnate, coriaceous, large. Flowers dioecious. Males in a terminal cone of hard peltate or flat scales bearing numerous, crowded, 1 celled anthers, or pollen-sacs. Females of flat carpellary leaves (carpophylls) bearing several ovules on the edge, arranged in a whorl at the top of the stem. Ovules large. sessile. Seeds large drupaceous, albumen copious.

Distributed all over temperate and tropical regions. Only genus here *Cycas.*

Trunk rough. Carpophylls elongate, *C. Rumphii*

Trunk smooth white. Carpophylls short, broad pectinate *C. Siamensis*

Cycas Rumphii, Miq. Bull. Sc Phys. et Nat Neerl 1839. Monogr. 29. Anal Bot. Ind. ii t. 5; 6; A & B. Linnœa XVII 688. Hook fil. Fl. Brit Ind V 657. *C. circinalis* Roxb. Fl. Ind. iii 744. Griff. Notul. VVI. Ic Pl. As. t. 361 (not of Linnè) *C. circinalis* var. *angustifolia* Miq. Comm. 119. *C. Wallichii* Miq. Monogr. Cyc. 32. *C. glauca* Miq. Monogr. 30 *C. macrocarpa*, Griff. Notul IV II. Ic Pl. As. t. CCCLXIII f2

Stem from 4 to over 20 feet tall, cylindric, brown, usually branched, and often emitting axillary buds usually about 1-2 feet through, covered with the rough leaf bases. Leaves simply pinnate 6 feet long and 2 feet across, very coriaceous; petiole 6 inches long armed with short thorns in the upper part, leaflets linear, acuminate, base decurrent on the rachis, 12 inches long, half-an-inch wide or narrower and shorter, midrib strong and prominent. Plants unisexual, Male cone about 1 foot long, orange colour, Antheriferous scales obcuneate apex shaped, broad with a long acuminate spine from a broad base, ¾ inch long, ½ inch wide at the apex, spine upcurved, half an inch long, pollen sacs very numerous, small, white, globose. Female carpophylls 9 inches long, petiole flattened, ¼ inch across, gradually dilating into the limb which is lanceolate and dilated at the end, ½ an inch across and shortly toothed, and ending in a long point, ¾ inch long, all orange-woolly. Ovules 4-6. Seed ellipsoid globose orange an inch through.

Singapore Changi (Ridley 3940 and 4408), Pulau Tekong Tampenis river; Pahang Pekan, Rumpin river, on sea shores, Raub Track (Machado) in forest; Perak, Kamuning, Limestone rocks; Adang Islands, Tanjong Hantu, Rawei.

Distrib South Tenasserim, Mergui, Malay Islands to North Australia.

Native Name "Pakis Laut" on account of the circinate vernation of the young leaves. A starch is obtained from the trunk, and the young leaves are eaten as a potherb. Usually this inhabits sandy spots near the sea, or on the sea beach, but I have met with it far inland in forests, *e.g.* at Kamuning. It is probable that in these cases, the plant has remained here since the formation of the alluvial flats now between it and the sea.

It was probably much more abundant on our sandy coasts but has disappeared except where isolated in gardens, owing to these spots being cleared and cultivated for coconuts.

The male cone has a strong odour of lady-birds, the pollen which is very abundant is said to be strongly narcotic.

Cycas Siamensis, Miq. Bot. Zeit 1863-334. Hook fil. Fl. Brit. India lc. 647.

Stem about 15 feet long, cylindric, but swollen abruptly at the base, smooth nearly white. Leaves about 3 feet long and 8 inches across, coriaceous, light green, petiole 1 foot long, ¼ inch wide, thorny in the upper part, Leaflets about 70 pairs naarow, linear, acuminate, ¼ inch across, midrib slender. Male cone. "Antheriferous scales ¾ inch long with a slender point as long." Female carpophylls, petiole 3 inches long about ¼ inch across, flattened, limb obovate with very long slender processes about 30, one to two inches long, narrow, acuminate. Whole carpophyll orange, woolly. Ovules few 3 or 4.

High up on limestone rocks. Terutau (Curtis 2427) Setul and Perlis

Distrib. Dry forests of the Prome district, Shan States and Cochin China.

Head Pressing amongst the Milanos of Sarawak.

BY JOHN HEWITT, B.A. & A. E. LAWRENCE.

With two plates.

In remote times the custom of head pressing in one form or another has been practised in many parts of the world. Nowadays however, the people who still hold to this remarkable habit are few in number and of local distribution. So far as the Malayan region is concerned, it appears to be confined to the Milanos of Sarawak, and to certain natives of Celebes. In all probability, the custom will die out amongst the Milanos at no very distant date: nevertheless at the present day a great majority of Milano women bear on their heads the unmistakable evidence of the press. A few only of the men have been thus deformed, though apparently it was at one time a privilege bestowed on all; a privilege because the press is considered to impart beauty to the subject.

The operation is performed during early infancy, the first application of the press being made when the child is only a week or two old: it is discontinued about three or four months afterwards. The apparatus employed is called a "Ja" at Mukah, an "Api" at Oya and at Bintulu a "Tadal:" the press itself is exactly the same at these three places. A "Ja" is simply a board of hard wood, shaped as in the figure, attached by strings to a T shaped piece of cloth which supports the back of the head: the central part of the wood rests upon a pad which is applied to the infant's forehead. The pad is made of folded up leaves or of cloth, and sometimes to increase its weight a flat stone or piece of wood occupies the interior of the pad. The strings which cross the board from end to end pass through a coin which is ordinarily situated at the centre of the board: by twisting the coin round and round the strings are tightened as in a torniquet and thus the pressure on the head may be gradually increased. When applying the "Ja," the infant is taken between the legs of the father or mother and the apparatus is gently fitted over its head. At first the strings are fairly loose and the inconvenience experienced by the child is slight: after a few minutes when her offspring is asleep, the mother carefully adds to the pressure of the "Ja" by twisting the coin round a few times: this she repeats at intervals of about ten minutes until, as she judges, the maximum pressure consistent with safety is attained: when the child finally wakens, the "Ja" is removed. This operation then is conducted only during the sleeping hours of the child, commencing at about 9 a.m. and resuming again about 2 p.m.: at night time, the baby has a respite as the "Ja" demands too much trouble of the parent. It occasionally happens that too much pressure is exerted and the child dies, but this is a rare occurrence as the Milanos are very fond of their children and prefer to forego the pressing altogether if the child protests too much.

The most obvious result of this operation is a well marked depression of the forehead: there is presumably a corresponding uprising of other parts of the head, but being distributed more or less uniformly over the rest of the cranium this is not recognisable. Head pressed Milanos usually have a characteristic squint in both eyes and occasionally the base of the nose is depressed.

Whether this custom ordinarily affects their mental ability is not certain though some observers believe that it really has a prejudicial effect: the average Milano certainly is rather a dull person, but the same may also be said of the Land Dayaks, who have never practised head pressing.

No incantations or religious ceremonies are associated with this remarkable custom and apparently the only element therein which savours of religion is the charms which are always attached to the ja. The charm, called "Luan" by Milanos, consists of a few flakes of soot scraped off from the family cooking pot: it is sewn up with cloth into tiny packets which are attached by strings to the ja. Similar charms are in use amongst the same people in other capacities: for instance such a charm is usually to be found tied to a Bayoh (medicine man) man's drum.

In addition to the Luan every ja is provided with a large blue bead which is attached to the string that goes over the head: this bead also functions as a charm.

After it has once been used a Ja may not be given away: they are in fact kept in use through several generations. One's neighbours are very fond of borrowing a lucky ja—one which always presses well—especially if it be an old one.

This custom is now falling into disuse for the very simple reason that it involves too much trouble: nowadays the housewife has to work hard to earn a living and it is very inconvenient to have to suspend the sago working every few minutes in order to attend to a sleeping baby.

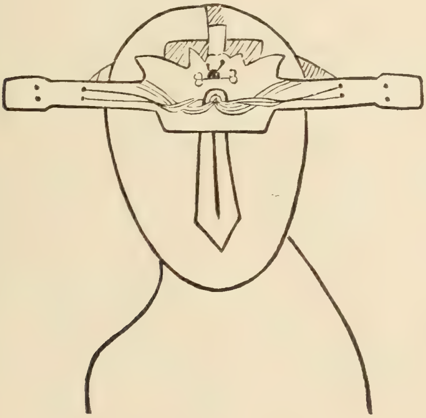
So far as is known head pressing is not practised elsewhere in Borneo. Nevertheless it should be noted that heads are often enough unintentionally deformed slightly, we believe, as a result of the very hard pillow—of wood alone—on which the infant rests when sleeping. This fact may account for a characteristic flatness often noticeable at the back of a Land Dayaks head. In north-west Celebes where the natives flatten heads and breasts the language has, according to the Rev. B. Mulder, many words in common with Milano: and moreover they have very similar fairy tales. It is therefore quite possible that the two peoples have been neighbours or even that they are related: nevertheless it is almost certain that the Milanos have lived for some—probably many—centuries in Sarawak and if there is any relationship it must have been in very remote times. The following tables give a few statistics which have bearing on this custom. The head measurements were taken at Mukah in 1906: these measurements are alas only approximately correct as we had to content ourselves with primitive apparatus—viz large callipers.

Length of a ja	13 ins.
Weight of same	13 oz.
Weight of pad and contained stone	12 oz.

Head measurements of a number of young Milano women.

The length of the head was measured from the middle of the forehead: the breadth was taken at the widest part.

Length in ins.	Breadth in ins.	Length in ins.	Breadth in ins.
$6\frac{1}{2}$	$6\frac{1}{8}$	$6\frac{3}{8}$	$6\frac{3}{8}$
$6\frac{5}{8}$	$6\frac{7}{16}$	$5\frac{7}{8}$	$6\frac{1}{4}$
$6\frac{3}{8}$	$6\frac{1}{8}$	6	$6\frac{1}{4}$
$6\frac{5}{8}$	$6\frac{1}{4}$	* $6\frac{3}{4}$	* $5\frac{5}{8}$
$6\frac{1}{4}$	6	$6\frac{5}{8}$	$6\frac{3}{8}$
$6\frac{1}{2}$	$6\frac{1}{4}$	† $6\frac{5}{8}$	† $6\frac{1}{8}$
$6\frac{1}{4}$	6	$6\frac{1}{2}$	$5\frac{5}{8}$
$6\frac{1}{4}$	$6\frac{1}{4}$	$6\frac{1}{2}$	$5\frac{3}{4}$
$6\frac{3}{8}$	$6\frac{3}{8}$		



Drawing of a model made by a Milano to shew method of application of the Ja.

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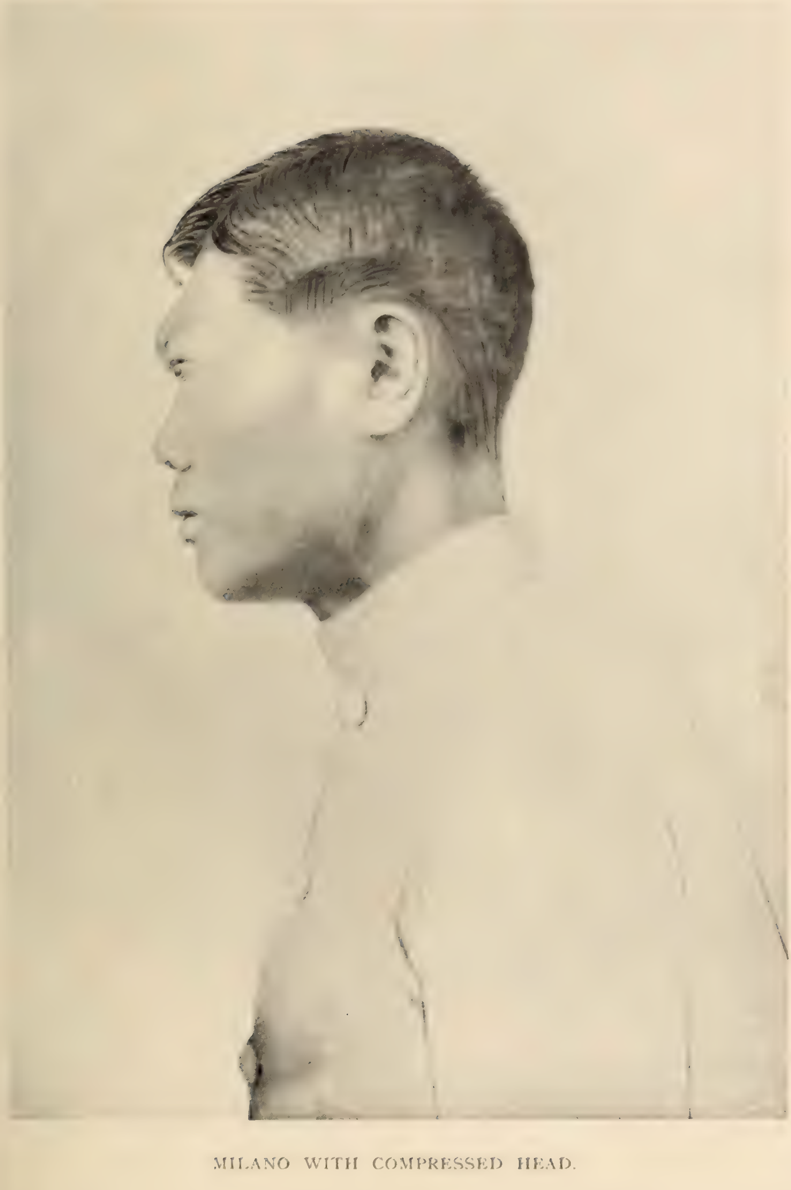
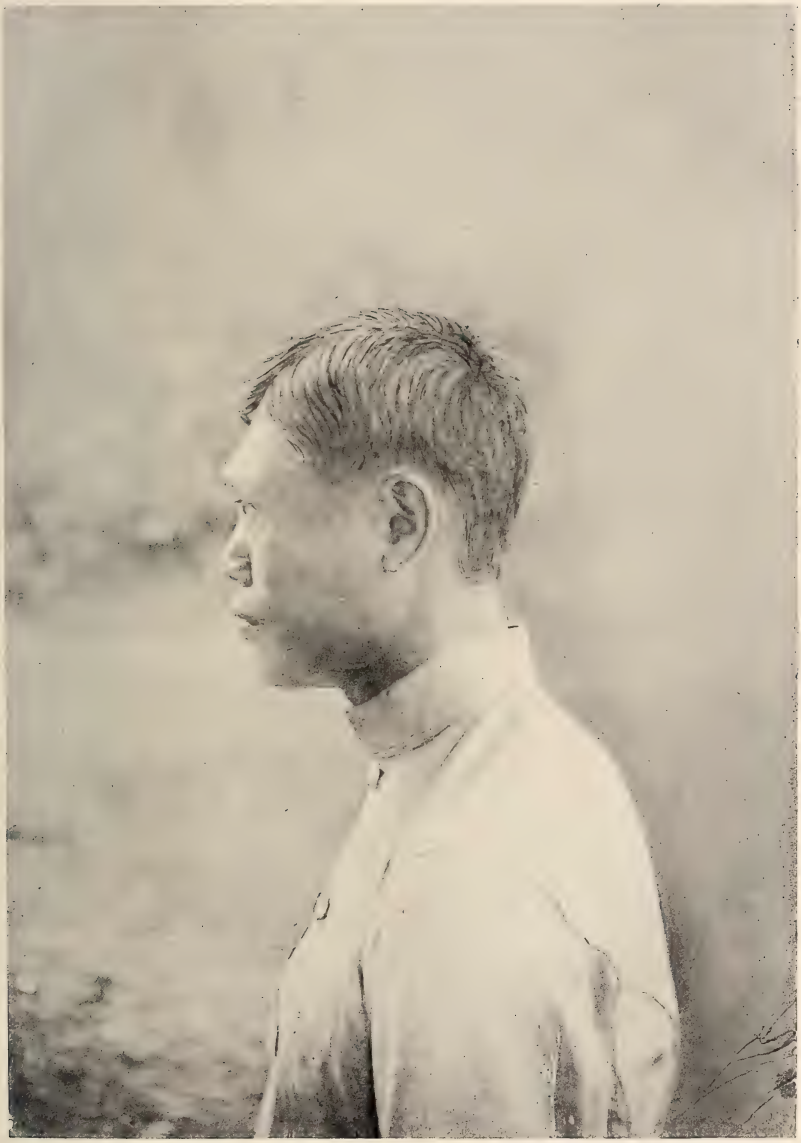
* Subject had not been pressed.

† ,, been slightly pressed.



MILANO WITH COMPRESSED HEAD.



MILANO WITH COMPRESSED HEAD.

A List of the Butterflies of Borneo with Descriptions of New Species.

By J. C. Moulton, F.E.S., F.L.S., F.Z.S.,
Curator of the Sarawak Museum.

Part III.

(Lycaenidae).

Parts I and II of this list, dealing with the Nymphalidae and Lemoniidae only, were published by Mr. Shelford in this Journal in 1904 and 1905 (Nos. 41 and 45). Mr. Shelford being unable to continue it, suggested that I should do so—a task I have gladly undertaken. This Part deals with the whole of the Bornean Lycaenidae, the most numerous of all the Families in Bornean Rhopalocera. The growth in our knowledge of the Lycaenidae of this country may be seen from the following figures:—Mr. Distant[1] in his great work, *Rhopalocera Malayana,* gives 32 species of Lycaenidae from Borneo. Mr. W. B. Pryer[2] after some 9 years' collecting in British North Borneo could only record 35 species (1887); before that, Mr. Herbert Druce[3] had recorded 71 collected in the neighbourhood of Labuan by Sir Hugh Low (1873); a number, which was increased to about 220 by Mr. Hamilton H. Druce[4] (1895), who had examined a large amount of material in the Godman-Salvin collection together with the Kina Balu and Labuan captures made by Waterstradt and Wahnes. Mr. Druce[5] published a second paper in 1896 increasing the total to 262; since that date some of the genera have been monographed and some new species described; including these and the species described for the first time in this paper, the total number of named forms and varieties now recorded from Borneo is 317; of which 300 are regarded here as true species. In comparison with these figures it may not be out of place to mention that de Nicéville and Martin[6] recorded 238 Lycaenidae from Sumatra out of a total of 756 Rhopalocera; so we may regard our present list as having some pretensions to completeness.

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[1] Distant, *Rhopalocera Malayana*, 1882.

[2] Pryer, *Annals and Magazine of Natural History*, 1887.

[3] Druce, *Proc. Zool. Soc. Lond.*, 1873.

[4] H. H. Druce, *Proc. Zool. Soc. Lond.*, 1895.

[5] H. H. Druce, *Proc. Zool. Soc. Lond.*, 1896.

[6] de Nicéville and Martin, *Journ. As. Soc. Beng.* Vol. LXIV, Part II, no. 3, pp. 357-555, 1895.

Jour. Straits Branch R. A. Soc., No. 58, 1911.

The system of classification followed in the first portion of this paper is that laid down by Col. Bingham in his volume on Indian Butterflies (*Fauna of British India Series, Butterflies*, Vol. II. 1907), which deals with five out of the seven Sub-Families occurring in this region. Of the remaining two Sub-Families, I have followed Mr. Bethune-Baker's recent monograph for the *Arhopalinae* ("A revision of the Amblypodia group of the Family Lycaenidae," *Trans. Zool. Soc. Lond.* Vol. XVII. pp. 1-153 Pl. I-V. 1903), and for the *Theclinae*, in the absence of any more up-to-date work, I have endeavoured to follow out the lines of classification suggested by Mr. de Nicéville in his *Butterflies of India*, Vol. III. 1890.

Mr. Shelford has kindly furnished me with a few field-notes, which I have added under his initials; and I am further indebted to him for much valuable advice and help received from time to time during the compilation of this paper. Dr. T. A. Chapman has kindly identified some of the Lycaenopsids for me, a difficult group unless one has devoted much study to its various species. To Mr. G. T. Bethune-Baker I owe thanks for help with some of the Arhopalas. And lastly, it is with much pleasure I take this opportunity of recording my indebtedness to Mr. Hamilton H. Druce, who has continually placed his valuable services at my disposal. Doubtfully identified species have been sent to him on and off for the last two years and without his help many little points would have still remained unravelled. The Superintendent of the Indian Museum has kindly supplied details of the Bornean Lycaenidae in the collections of that Museum.

Although the general system laid down by Mr. Shelford for Parts I and II, has been followed for this Part, I have considered it advisable to amplify it on one or two points. Thus in quoting the literature for each species I have given the reference to the original description first, then the name and reference of any species that has been proved synonymous; in cases where the original description being for one sex only, the other sex has been described elsewhere, I have given both references.

As Borneo is the third largest island in the world, it would seem superfluous to remark on the vagueness of "Borneo" as a habitat for any species, although this has sufficed for many writers on the different branches of the Fauna of Borneo. However, care has been taken in this paper to give as many *exact* localities as possible; so that by this means some traces of relationship may be indicated between the fauna of different parts of Borneo and the surrounding countries, and between the mountain fauna of Borneo and that, for instance, of Upper Burma and the Himalayas. The majority of localities are taken from the fine collection in the Sarawak Museum, and for that reason many of those names are of places in Sarawak. The same geographical order of names is always adhered to, *viz.* starting from Sandakan on the North-East coast, going round to the North of the island, then south-westwards and taking in Mt. Kina Balu, through Lawas, Limbang, Brunei to the western limit of Sarawak territory; then south through Sambas, and Pontianak and so along the South coast to Bandjermasin and Pulo Laut where Mr. Doherty collected many species.[1]

It is proposed to follow Mr. Shelford's original idea of reserving a discussion on the geographical distribution of Bornean Butterflies for an Appendix, to be added after the completion of the whole list. However, it will not be out of place to give here the following figures, which indicate some of the principal features of the distribution of Bornean Lycaenidae.

Out of the 300 species recorded, no less than 117 are at present confined to Borneo as far as we know. Of the remainder, 120 are common to Borneo and the Malay Peninsula (Burma to Singapore), 98 to Borneo and Sumatra, and 47 to Borneo and Java. The comparatively small relationship with the Philippines, Celebes and New Guinea (including Australia) is shown by the occurrence of 41, 13 and 14 Bornean species respectively in those countries.[2]

Due regard has been paid to the importance of recording any variations in all the forms, and the Sarawak Museum collection has been carefully examined for this purpose.

The following new species are now described for the first time. Those marked with an asterisk indicate that they were noted as new by Mr. Shelford, but not described, and I have retained his names for those species.

270. *Allotinus strigatus*
272. *Allotinus borneensis*
*498. *Charana? abnormis*
289. *Logania drucei*
298. *Neopithecops oskewa*
314. *Lycaenopsis lingga*
*315. *Lycaenopsis nigerrimus*
318. *Lycaenopsis delapra*
*354. *Lampides vyneri*
*381. *Poritia pasira*
402. *Arhopala incerta*
428. *Arhopala sarawaca*
432. *Arhopala tembaga*
451. *Arhopala shelfordi*
452. *Arhopala rajah*
474. *Tajuria sunia*
486. *Chliaria balua*
497. *Charana splendida*
*498. *Charana? abnormis*
506. *Horaga albistigmata*

Some of the Bornean Lycaenidae have been described from one sex only, and I am able to furnish descriptions of the hitherto-unknown sex of the following species:—

311. *Lycaenopsis sonchus*, H. H. Druce, ♀
316. *Lycaenopsis moultoni*, Chapman, ♀
326. *Nacaduba lugine*, Druce, ♀
327. *Nacaduba angusta*, Druce, ♀
341. *Lampides virgulatus*, H. H. Druce, ♀
379. *Poritia philura*, H. H. Druce, ♀

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[1] For a lucid and concise description of Sarawak localities see Shelford in *Straits Branch, Roy. As. Soc.* Journ. No. 35, p. 44, 1901.

[2] Owing to our incomplete and uneven knowledge of the Butterfly Fauna of these countries these figures are necessarily inaccurate to a certain degree, but they serve to indicate the lines of relationship and to corroborate the conclusions arrived at by other writers on the various branches of the Bornean Fauna.

530. *Lehera anna,* H. H. Druce, ♂
537. *Deudorix strephanus,* H. H. Druce, ♀

The single plate accompanying this paper is reproduced from a photograph of Sarawak specimens by Mr. C. Jee Koo of the Sarawak Museum.

Sub-Fam. I. GERYDINAE.

This Sub-Family is practically confined to the Indo-Malayan Region and a glance at current literature[1] shows that its principal range is confined to the Malay Peninsula, Sumatra and Borneo, with headquarters in the last named country. Out of 62 species recorded from this region, no less than 33 are found in Borneo; Sumatra comes next with 23 species, the Malay Peninsula and Upper Burma with 16 and 18 respectively. But 7 species are found in Celebes, 9 in the Philippines and 7 in Java. Borneo has 18 species which are not found elsewhere.

Genus, GERYDUS, Boisduval.

257. *Gerydus gigas,* H. H. Druce.

Gerydus gigas, H. H. Druce, Proc. Zool. Soc. Lond., p. 559, pl. XXXI. fig. 3, ♂ (1895).

Mt. Kina Balu only.

Allied to *G. gigantes,* de Nicév., from North-East Sumatra.

258. *Gerydus innocens,* H. H. Druce.

Gerydus innocens, H. H. Druce, *t. c.* p. 560, pl. XXXI. fig. 4, ♂ (1895).

Mt. Kina Balu; Selinguid, near Batu Lawi (Sar. Mus.). The single Sarawak example is a female: colouring and markings agree well with Druce's figure of the male, but the fore-wings are more rounded at the apices and the hind-wings squared, suggestive of a tail as in *caudatus.*

259. *Gerydus improbus,* H. H. Druce.

Gerydus improbus, H. H. Druce, *op. cit.,* p. 651, pl. XXIX. figs. 1, 2, ♂ and ♀ (1896).

Mt. Kina Balu only.

Closely allied to *G. innocens,* Druce.

260. *Gerydus symethus,* Cr.

Papilio symethus, Cramer, Pap. Ex. ii. pl. CXLIX, figs. B, C, ♀ (1779).

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[1] These figures are obtained after consulting (i) Bingham, *Fauna Brit. Ind., Butterflies,* Vol. II. 1907, (ii) Swinhoe, *Lepidopt. Ind.* Vol. VII. 1905-10, (iii) de Nicéville and Martin, *Butterflies of Sumatra,* 1895, and (iv) the present list of Bornean Butterflies. A search into further literature would no doubt show more species recorded from Java, Celebes and the Philippines, but it seems unlikely that any country will provide as many species of this Sub-Family as does Borneo.

Symetha pandu, Horsfield, Cat. Lep. Mus. E. I. C. pl. II, figs. 2, *2a-i.* (1828).

Miletus zinckenii, Felder, Reise, Nov. ii. p. 284, pl. 35, fig. 34, ♂ (1865).

Sandakan, Labuan; Trusan and Pulo Laut (Sar. Mus.).

Distribution: Tenasserim; Moulmein and south of Mergui; Malay Peninsula and Archipelago; from Philippines to New Guinea.

[An example of this species was observed in May 1904 in the Botanic Gardens, Singapore, settled on a large leaf on which several ants were moving about. On a closer examination it was seen that both the ants and the butterfly were sucking the fluid secretion from the cloacal aperture of some small larval *Fulgoridae* or *Jassidae.* The larvae rested placidly whilst their attendant guests imbibed the presumably sweet fluid; but when disturbed they hopped off the leaf and were lost in the surrounding vegetation]. R. S.

Similar cases have been reported to me by native collectors during the last eighteen months in connection with other *Gerydinae* (viz. *Gerydus ancon, Allotinus horsfieldi, A. nivalis, Logania sriwa, L. drucei* and *L. staudingeri*)[1]; and in May this year (1911) I was fortunate enough to make the observation myself.

The above observations are of some interest as affording a parallel to the case of *Allotinus horsfieldi,* Moore, which was observed by Col. H. J. W. Barrow, R.A.M.C., in attendance on *Aphidae* in India.[2]

The record of the two *Logania* species attending *Homoptera* is interesting because their legs are of normal length, while those of *Allotinus* and *Gerydus* are peculiarly long, and as remarked by Col. Barrow, are well adopted for standing over a mass of Aphides.

261. *Gerydus ancon,* Doherty.

Gerydus ancon, Doherty, Journ. As. Soc. Beng. p. 438, pl. 23, fig. 8 (1889).

A male and female, taken in the upper waters of the Limbang River, Sarawak, the latter near Batu Lawi (Sar. Mus.).

Only recorded from Tenasserim and Burma before. Bingham remarks on its rarity.

The Sarawak male differs from the mainland form in the white band on upperside of fore-wing *not* being completely interrupted by the junction of basal and hind-marginal fuscous colouring. Also the marginal dark line on the underside of hind-wing of the continental *G. ancon* male is replaced in the

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[1] Moulton. *Proc. Ent. Soc., Lond.* 1910. pp. xxxviii—xli.

[2] *Fauna of British India : Butterflies.* Vol. II. 1907. p. 287.

Sarawak form by a line of spots and Swinhoe figures a similar line of spots for the female from Tenasserim. In other respects it agrees well with the excellent figure given by Swinhoe (*Lepidopt. Ind.* Vol. VII. pl. 612, figs. 2, 2b. 1910).

It is extremely close to *G. gigas,* H. H. Druce, but differs in the basal region of fuscous almost joining that of the hind-margin—one millimetre only separates them in the male; while in the female this fuscous area does not approach that of the hind-margin quite so much; in *gigas* the reverse is the case according to Druce's description. The swollen portion of the third margin quite so much; in *gigas* the reverse is the case according to Druce's description. The swollen portion of the third median nervule in the male is about one-fifth of an inch long as in *gigas.* It seems probable therefore that there are really three forms of *G. ancon.*

(i) The Tenasserim-Burma form in which the whole band of the fore-wing is completely divided (*G. ancon,* Doherty).

(ii) The Sarawak form in which it is nearly divided, culminating in the extreme form—

(iii) The Mt. Kina Balu form in which the white band of the fore-wing in the male is comparatively broad right across the wing (*G. gigas,* Druce). Until further specimens come to hand to confirm or refute these suggestions it is perhaps better to keep the two species (*ancon* and *gigas*) separate.

The male was reported by the native captor to have been in attendance on some immature *Homoptera*—probably *Jassidae?*—also captured and brought to me.

262. *Gerydus petronius,* Dist. and Pry.

Gerydus petronius, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. XIX. p. 266 (1887).

Sandakan, British North Borneo.

This species is unknown to me. Bingham notes that it is very close to, if not identical with, *G. longeana,* de Nicév.

263. *Gerydus boisduvali,* Moore.

Miletus boisduvali, Moore, Cat. Lep. Mus. E. I. C. i. p. 19, pl. I a, fig. 1, ♀ (1857).
Miletus chinensis, Felder, Verh. zool-bot. Ges. Wien. xii. p. 488 (1862).
Miletus boisduvali, var. *ceramensis,* Ribbe.
Gerydus boisduvali, var. *acragas,* Doherty, Journ. As. Soc. Beng. p. 186 (1891).
Miletus irroratus, Druce, Proc. Zool. Soc. Lond. p. 106 (1874).

Borneo.

General distribution of var. *ceramensis* includes Celebes, Amboyna, Saigun, Buru and Borneo. That of the typical form is wider (though it does not include Borneo), ranging as it does over Sikkim, Assam, Upper and Lower Burma, Natuna Islands, Tenasserim, Hongkong, Sumatra, Java and Ceylon.

264. *Gerydus biggsii,* Dist.

Gerydus biggsii, Distant, Rhop. Malay. p. 206, pl. XXII. fig. 12, ♀ (1884).
Gerydus gopara, de Nicév., Butt. Ind. III. p. 25 (1890).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt); Labuan (Low); Padas R., Mt. Marapok (Ind. Mus.); Limbang, Malinau, Banting, Tambak, Kuching, Bidi, Tegora, Pulo Laut (Sar. Mus.).

Distribution: Tenasserim, Malay Peninsula and Archipelago.

As regards the white band of the fore-wing, Druce remarks on the variability of its width; a comment, which is well borne out in a large series in the Sarawak Museum. The width of the band measured along the median nervure in six male examples varies from 6 mm. to 2.5 mm. In the females the variation is not so marked. In some the band extends to the costa, while in others it only just traverses the cell.

Quite common and taken all the year round in Sarawak.

265. *Gerydus philippus,* Staud.

Miletus philippus, Staudinger, Lep. Palaw. p. 92, pl. I. fig. 2 (1889).
Gerydus irroratus, Semper (*nec* Druce), Schmett. Phil. Insel. p. 162, pl. XXXI. figs. 10-12 (1889).

Trusan and Pulo Laut (Sar. Mus.); Labuan.

In this species the white marking of the fore-wing is also variable.

Described from Palawan.

266. *Gerydus vincula,* H. H. Druce.

Gerydus vincula, H. H. Druce, Proc. Zool. Soc. Lond. p. 561, pl. XXXI. figs. 9, 10, ♂ and ♀ (1895).

Borneo.

Genus, ALLOTINUS, Felder.

267. *Allotinus horsfieldi,* Moore.

Miletus horsfieldi, Moore, Cat. Lep. Mus. E. I. C. i. p. 19, pl. I a. fig. 2, ♂ (1857).
Paragerydus horsfieldi, Distant, Rhop. Malay. p. 207, pl. XX. fig. 7, ♀ (1884).

Sandakan; Mt. Kina Balu; Labuan; Lawas, Trusan, Banting, Tambak, Kuching (Sar. Mus.); S. E. Borneo (Wahnes).

Distribution: Tenasserim to Malay Peninsula and Archipelago.

One of the commonest *Gerydinae* in Sarawak. De Nicéville and Martin remark the same of it in Sumatra.

268. *Allotinus melos,* H. H. Druce.

Paragerydus melos, H. H. Druce, Proc. Zool. Soc. Lond. p. 602 (1896).

Cagayan.

Mr. Druce observes that this species is closely allied to *A. horsfieldi,* Moore.

269. *Allotinus waterstradti,* H. H. Druce.

Paragerydus waterstradti, H. H. Druce, *op. cit.* p. 562, pl. XXXI. figs. 1, 2, ♂ and ♀ (1895).

Mt. Kina Balu; Sapagaya (Cator); South Borneo (Ind. Mus.).

269a. Ab. *absens,* Druce (*l. c.*).

Mt. Kina Balu.

270. *Allotinus strigatus,* n. sp.

Male. *Upperside.* Dark brown. *Fore-wing:* uniform dark brown, except for an ovoid patch beyond cell; this patch is less defined and more ovoid than in *A. horsfieldi,* Moore; the four light costal spots, present in that species, are also to be seen in *strigatus. Hind-wing:* uniform dark brown; hind margin rounded, less crenelated than in male *horsfieldi. Underside.* Light grey-brown ground-colour crossed by transverse lines of brown strigae and further darkened by many small brown spots and slender strigae. *Fore-wing:* three short broken lines are formed by transverse strigae at base, centre and end of cell; these are succeeded by a well marked sub-marginal series of inter-nervular strigae. Hind-margin is bordered by a line of small inter-nervular black-brown spots outwardly touched with whitish-grey. Inner marginal region more or less devoid of spots or strigae. *Hind-wing:* a small brown spot at base, succeeded by a broken concave series of three larger spots across the basal region; these in turn succeeded by a more pronounced line of five strigae across the discal area; followed by a sub-marginal concave series of six lunular transverse strigae; marginal black-brown spots as in fore-wing. Cilia light grey-brown as in ground-colour.

Female. *Upperside.* Uniform dark fuscous. *Underside.* Markings and coloration as in the male. Hind-wings rounded as in the female of *horsfieldi.*

Exp. al. ♂, 38 mm.; ♀, 36 mm.

Types, ♂ and ♀, from Pulo Laut and Kuching (Sar. Mus.).

These and another male captured near Kuching in 1895 are the only three examples at present known.

271. *Allotinus pyxus,* de Nicév.

Paragerydus pyxus, de Nicéville, Journ. As. Soc. Beng. Vol. XLIII. pt. 2. No. 1. p. 27, pl. V. fig. 2, ♂ (1894).

Borneo: Sandakan, Sapagaya, Melikop, Labuan.

"Described from a single example received from the late Mr. W. Davison." (de Nicév. *l.c.*).

Mr. Druce (*Proc. Zool. Soc. Lond.* p. 652, 1896) reports several specimens from the above mentioned localities.

272. *Allotinus borneensis,* n. sp.

Male. *Upperside.* Dark brown. *Fore-wing:* uniform dark brown, except for an elongated narrow discal streak, starting on the median nervure at base of second median nervule, and continuing along the third median nervule to a point 2—3 mm. from the hind-margin. Four whitish, generally indistinct, spots along the outer edge of costa as in *A. horsfieldi,* Moore. *Hind-wing:* uniform dark brown. *Underside.* Light drab ground-colour, covered with small brown transverse strigae and spots, which give a light-brown mottled appearance. *Fore-wing:* three transverse strigae—at base, centre and end of cell—are slightly larger than the rest. Inner marginal area is free from spots and strigae. Hind-margin bordered by a row of seven small inter-nervular black-brown spots, outwardly edged with creamy white; the two spots nearest the apex have an additional touch of black-brown on the outer edge of the white. *Hind-wing:* basal and inner-marginal region slightly freer from spots and strigae. Fusion of spots forms three large strigae situated above and below the second subcostal nervule and at end of cell; a rough sub-marginal row of smaller transverse strigae; hind-marginal row of small black-brown spots as in fore-wing, except that the whitish outer edging is very much reduced. Cilia light drab as ground-colour in both wings. Antennae, head, thorax and abdomen concolorous with the wings; below: palpi, thorax and abdomen whitish.

Female. *Upperside.* Dark-brown. *Fore-wing:* uniform dark-brown. Four whitish spots along the outer edge of the costa as in the male. *Hind-wing:* uniform dark-brown. Much more square than the male, a peculiarity which is formed by the extension of the third median nervule into the anal angle so as to suggest a rudimentary tail.[1]

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[1] Druce remarks on *A. caudatus,* female, that this extension of the third median nervule so as to form a blunt tail, distinguishes that species *(caudatus)* from all others in the genus. Mr. Druce who kindly examined this species for me, remarks that it is unknown to him, so that *borneensis* is the third "tailed" *Allotinus* to be described, for the female of *A. panormis,* Elwes, also has this peculiarity.

Underside, as in male. Antennae, palpi, head, thorax and abdomen as in male.

Exp. al. ♂, 46 mm.; ♀, 41 mm.

Types, ♂ and ♀ : Kuching and Mt. Saribu, Sarawak (Sar. Mus.).

Sarawak: Mt. Saribu, Kuching and Mt. Matang—2000 ft. (Sar. Mus.).

As yet only known from Sarawak.

273. *Allotinus moorei,* H. H. Druce.

Miletus moorei, Staudinger, M. S.

Paragerydus moorei, H. H. Druce, Proc. Zool. Soc. Lond. p. 562, pl. XXXI. figs. 5, 6, ♂ and ♀ (1895).

Mt. Kina Balu; Sarawak and S. Borneo (Ind. Mus.).

274. *Allotinus taras,* Doherty.

Paragerydus taras, Doherty, Journ. As. Soc. Beng. Vol. LVIII. Pt. 2. p. 437, pl. XXIII. fig. 10, ♂ (1889).

S. E. Borneo: north of Banjarmasin (Wahnes).

Distribution: Tenasserim, Chittagong Hill-tracts. And probably from the Malay Peninsula, as Mr. Doherty notes that an apparently identical form occurs there and in S. E. Borneo.

275. *Allotinus caudatus,* Grose-Smith.

Allotinus caudatus, Grose-Smith, Ann. Mag. Nat. Hist. ser. 5. Vol. XII. p. 34 (1893).

Mt. Kina Balu; British North Borneo, Sadong, Kuching and Lundu (Sar. Mus.).

The example (a ♀) from British North Borneo is remarkably small, measuring only 1⅛ inch, while the type female is 1⅖ inch.

276. *Allotinus fabius,* Dist. and Pry.

Paragerydus fabius, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. Vol. XIX. p. 266 (1887).

Sandakan (Pryer); North Borneo (Ind. Mus.).

Druce suggests that it may turn out to be the same as the preceding species, though he notices that Distant does not describe a projecting third median nervule, which is a distinctive character of *caudatus.* Swinhoe regards the two species as identical. Unknown to me.

277. *Allotinus aphocha,* Kheil.

Allotinus aphocha, Kheil, Rhop. Ins. Nias, p. 28, pl. V. fig. 30 (1884).

Mt. Kina Balu, Labuan; Sarawak: Limbang, Saribas, Tambak, Quop, Santubong and Kuching (Sar. Mus.).

Extends to Nias Island from where it was originally described.

It seems to be fairly common in Sarawak from March to October.

278. *Allotinus subviolaceus,* Feld.

Allotinus subviolaceus, Felder, Reise, Nov. Lep. II. p. 286, pl. XXXV. figs. 27, 28 (1865).

Allotinus alkamah, Distant, Rhop. Malay. p. 452, pl. XLIV. fig. 3, ♂ (1886).

Allotinus subviolescens (*sic*), Swinhoe, Lepidopt. Ind. p. 196, pl. 616, figs. 1, *a, b,* ♂ and ♀ (1910).

Sandakan, Mt. Kina Balu, Kuching and Mt. Matang—3200 ft. (Sar. Mus.).

Distribution: Tenasserim to Malay Peninsula and Archipelago.

279. *Allotinus audax,* H. H. Druce.

Miletus audax, Staudinger, M. S.

Allotinus audax, H. H. Druce, Proc. Zool. Soc. Lond. p. 564, pl. XXXI. figs. 11, 12, ♂ and ♀ (1895).

Mt. Kina Balu only.

280. *Allotinus unicolor,* Feld.

Allotinus unicolor, Felder, Reise, Nov., Lep. II. p. 286 (1865).

Sandakan (Pryer).

This species also occurs in Singapore.

281. *Allotinus nivalis,* Druce.

Miletus nivalis, Druce, Proc. Zool. Soc. Lond. p. 348 (1873).

Logania substrigosa, Moore, Journ. As. Soc. Beng. p. 22 (1884).

Sandakan; Mt. Kina Balu; Labuan; Kuching (Sar. Mus.); S. E. Borneo.

Distribution: Tenasserim southwards to Mergui; Malacca, Sumatra and Nias.

Druce suggests that *substrigosa,* Moore, may be a distinct species as the type and all other specimens examined by him from Borneo have the black spot on the costa of the hind-wing below replaced by a pale brown one. An examination of many specimens in the Sarawak Museum does not uphold this; as in some the spot is light brown, in others very dark brown, and in one the scales forming the spot are undoubtedly black.

A very common species near Kuching, Sarawak.

282. *Allotinus nicholsi,* sp. n.

Male. *Upperside.* Uniform rich brown fuscous. *Underside.* Light ground-colour densely irrorated with minute brown scales. *Fore-wing:* a rough sub-marginal line formed by little fasciae of brown scales from costa to inner margin, slightly curved inwards towards costa. A hind-marginal line of small dark-brown internervular spots. *Hind-wing:* a rough discal line from costal nervure across cell to inner margin; a slender fascia closing cell; an indistinct fascia at one third the length of costa from apex; a submarginal, much-interrupted line of outwardly oblique fasciae from radial nervule to inner margin. Small black internervular spots along hind-margin as in fore-wing. Cilia brown fuscous.

Exp. al. 27 mm.

Type. Male (and only known example) from Quop, Sarawak (Sar. Mus.).

Named after the Rev. Nicholas formerly S. P. G. missionary at Quop.

The delicacy of the irrorations on the underside point to the relation of this species to *A. subviolaceus,* Feld., but the brown fasciae in that species are much more pronounced than in *nicholsi* where they are hardly perceptible. Mr. Druce kindly examined this specimen for me and reported it as unknown to him.

Genus, Logania, Distant.

283. *Logania regina,* Druce.

Miletus regina, Druce, Proc. Zool. Soc. Lond. p. 348, pl. XXXII. fig. 4 (1873).

Sandakan (Pryer); Melikop and Banguey Island (Cator); Labuan (Low).

Mr. Druce remarks on the proximity of this species to our next species.

284. *Logania sriwa,* Dist.

Logania sriwa, Distant, Ann. Mag. Nat. Hist. ser. 5. Vol. XVII. p. 531 (1886).

Sarawak: Kuching (Sar. Mus.); Pulo Laut (de Nicéville).

Taken all the year round commonly.

Distribution: Malacca, Perak and Sumatra.

A beautifully protected species when at rest with wings closed on the upperside of a leaf. I have noticed how conspicuous it is when flying some 5 to 8 feet up among the trees, and then, on settling, how it completely disappears. The white streak on the underside helps wonderfully to break the outline of the insect and so render it invisible.

285. *Logania marmorata,* Moore.

Logania marmorata, Moore, Journ. As. Soc. Beng. p. 22 (1884).

Pulo Laut (de Nicéville).

Distribution: Tenasserim and Mergui Archipelago. Sumbawa (Doherty).

De Nicéville suggests that this species cannot stand as a species distinct from *L. sriwa,* Dist. "and that most likely the

'*Miletus*' *lahomius* of Kheil (Rhop. Insel. Nias p. 27. n. 77, pl. V. figs. 28, 29, (1884), from the Island of Nias, will hereafter be proved to be another synonym of the same species." (*Journ. As. Soc. Beng.* LXIII. Pt. II. No. 1. p. 29).

286. *Logania malayica,* Dist.

Logania malayica, Distant, Rhop. Malay. p. 208. n. i. pl. XXII. fig. 21, ♀ (1884).

Sandakan (Cator); Lundu, Sambas, Pulo Laut (Sar. Mus.); S. E. Borneo (Doherty).

Distribution: Malay Peninsula, Sumatra and Philippine Islands.

287. *Logania distanti,* Staudinger.

Logania distanti, Staudinger, Lep. Palaw. p. 93, pl. 1, fig. 3, ♀ (1889).
Logania obscura, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. Vol. XIX. p. 266 (1887) [nom-praeocc.].

Sandakan (Pryer).
Palawan and Philippine Islands.

Mr. Druce informs me that *obscura,* Distant, seems to have a whitish suffusion over the hind-wing above which is not present in *distanti,* Staudinger; but he doubts their specific distinction.

288. *Logania staudingeri,* H. H. Druce.

Logania staudingeri, H. H. Druce, Proc. Zool. Soc. Lond. p. 565, pl. XXXI. figs. 13, 14, ♂ and ♀ (1895).

Mt. Kina Balu (Waterstradt); Kinabatangan, North Borneo, and Mt. Matang—2000 ft. (Sar. Mus.).

289. *Logania drucei,* n. sp. (Fig. 9, ♂).

MALE. *Upperside.* Dark fuscous, relieved by small circular blue-white discal patch in fore-wing situated across the base of the three median nervules, but not reaching the cell, discocellular nervule or submedian nervure. Cilia dark fuscous. Hind-margin of fore-wing uneven, of hind-wing very slightly scolloped at the anal angle. *Underside.* Partly tawny-fuscous, part plumbous-fuscous. *Fore-wing,* with two transverse striae: one rather indistinct across the cell, the other, well-defined, closing the cell. The costal half of the fore-wing is tawny fuscous, the remainder plumbous-fuscous. *Hind-wing:* irregular and indistinct transverse striae below costa and at base, succeeded outwardly by a well-defined reniform spot below the costa and two indistinct and irregular striae closing cell and joining inner margin; an irregular post-discal chain of indistinct transverse striae. Cilia dark fuscous.

FEMALE. *Upperside.* Large blue-white discal patch in fore-wing, with dark fuscous apical area from costa to anal angle and slightly diffuse along the inner margin; light fuscous scales at base of fore-wing. Hind-wing, fuscous with plumbous tinge across the disc to inner margin. Apex of fore-wing more obtuse and hind-margin more rounded than in the male. *Underside.* As in male, except that the striae are more distinct, and that a hind-marginal row of indistinct dark spots can be seen in both wings.

Exp. al. ♂, 25 mm., ♀, 24 mm.

Types. (Male and female) Matang Road, near Kuching, Sarawak, February 22nd and 23rd, 1911 (Sar. Mus.).

Taken commonly in the same locality during the first four months of the year (1911). Dedicated to Mr. H. H. Druce to whom I owe much for continued help in the preparation of this paper. He examined this species (among many others) for me and writes that, in his opinion, it is quite distinct from *L. massalia,* Doherty, although allied to it—a species which occurs in the Malay Peninsula, Java and Sumatra. He notes that in *drucei* the discal spot above is much bluer and more defined, and below, the ground colour appears to be plumbous white, which is not the case in *massalia;* further, that the margins are more even than in *massalia,* where they are slightly scolloped, while in *staudingeri* and *distanti* they are more scolloped.

One of the females has a small piece out of the anal angle of the left hind-wing, suggestive of an attack made by a bird or lizard enemy. It is curious that out of some 200 *Gerydinae* examined, this is the only specimen bearing any signs of an attack.[1]

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[1] For the importance of recording the evidence of attacks made on butterflies by their enemies and for an interesting discussion on this problem, see *Essays on Evolution* by Professor E. B. Poulton, F. R. S. 1908. pp. 70, 281-3,304 and 325. It is due to the suggestive remarks of Professor Poulton that I have carefully noted all the signs of injuries exhibited in the Bornean Lycaenidae examined by me, descriptions of which will be found throughout this paper. The accumulation of such records is of general value in helping to refute certain statements made now and again in entomological circles, namely that butterflies are *not* subject to such severe attacks as has been frequently claimed; the authors basing their statements as a rule on the paucity of *direct* observations, without taking into account the mass of *indirect* evidence, which, though available in most large collections, is not often recognized, or the important evidence adduced from the examination of birds' stomachs for instance. The special interest of the observations made in this paper lies in the support given by them to the theory of Directive Markings, eg. as exhibited by the anal markings and tails in many *Theclinae*, which are rendered conspicuous in order to direct an enemy's attack to a non-vital part. Hence the absence of attacks noted on the *Gerydinae*, which rely on a different method for protection, namely that of procryptic colouring. (See concluding paragraph on this subject under 553.—*Virachola smilis* on page 173 of this paper). That there are relatively few instances noted in this paper is due to the fact that nearly all the specimens examined belong to a collection of "naturally selected" *good* specimens—the careful work of native collectors and Museum Curators for the last 20 years! I should also add that no mention is made of worn and damaged specimens, whose injuries might be attributed to other causes.

Sub-Family II. LYCAENINAE.

Genus, CYANIRIOIDES, de Nicéville.

290. *Cyanirioides libna,* Hew.

Hypolycaena libna, Hewitson, Ill. Diurn. Lep., Lyc. Supp. p. 15, pl. V. (Supp.) figs. 39, 40, ♀ (1869).

Cyanirioides libna, H. H. Druce, Proc. Zool. Soc. Lond. p. 565, ♂ (1895).

Sandakan (Hewitson); Mt. Matang, Sarawak (Sar. Mus.).

De Nicéville (*Butt. Ind.* p. 32.) says it is probably the same as an Indian species—*Logania andersonii,* Moore, *i.e.,* a member of the Sub-Family *Gerydinae.*

Druce (*l.c.*), from an examination of a male, places it next to *Poritia,* to which genus he says it is closely allied, *i.e.,* a member of the Sub-Family *Poritiinae.*

A careful examination, however, of the single Sarawak example shows that it undoubtedly belongs to the Sub-Family *Lycaeninae,* as defined by Bingham (*Faun. Brit. Ind.* Vol. II. p. 284).

Genus, HYPOCHRYSOPS, Felder.

291. *Hypochrysops coelisparsus,* Butler.

Miletus coelisparsus, Butler, Ann. Mag. Nat. Hist. ser. 5. Vol. XII. p. 159 (1883).

Sandakan and Libaran Island (Cator).
Unknown to me.

Genus, PITHECOPS, Horsfield.

292. *Pithecops hylax,* Fab.

Papilio hylax, Fabricius, Syst. Ent. p. 526. n. 351 (1775).

Mt. Kina Balu; Labuan; Kuching, Mt. Matang (Sar. Mus.); Mt. Marapok and South Borneo (Ind. Mus.); near Banjermasin.

Distribution: Sikkim to Malay Peninsula and Archipelago.

Horsfield notes that the larva feeds on a leguminose plant, and that he gave it the name *Pithecops* on account of the curious resembles of the pupa to the face of a monkey.

De Nicéville records its "weak fluttering flight" in heavy forest only.

Genus, SPALGIS, Moore.

293. *Spalgis epius,* Westw.

Lucia epius, Westwood, Gen. Diurn. Lep. Vol. II. p. 502, pl. LXXVI. fig. 5, ♀ (1852).

Mt. Kina Balu (Waterstradt); North Borneo (Sar. Mus.).
Distribution: India, Ceylon, Burma and Penang.

294. *Spalgis nubilus,* Moore.

Spalgis nubilus, Moore, Proc. Zool. Soc. Lond. p. 522 (1883).

Sandakan (Pryer); Labuan (Wahnes).
Distribution: Ceylon; the Andamans and Nicobars.

De Nicéville, Druce and Swinhoe follow Moore in treating this species as distinct from *epius,* but Bingham treats it as a closer relation under the title of "race."

Genus, TARAKA, de Nicéville.

295. *Taraka hamada,* Druce.

Miletus hamada, Druce, Cist. Ent. Vol. I. p. 361 (1875).

Mt. Kina Balu (Waterstradt).
Distribution: Sikkim to Malay Peninsula and Archipelago; China and Japan.

Doherty, quoted in *Butterflies of India* Vol. III, p. 57, says: "So far as I know, the species of this genus occur in the low-country; they are found in forest, and are very weak and moth-like in flight." In view of this it would be of interest to know at what altitude Waterstradt took this species on Kina Balu.

Genus, LYCAENOPSIS.[1] Felder.

Sub-genus, *Notarthrinus,* Chapman.

296. *Lycaenopsis* (*Notarthrinus*) *musina,* Snell.

Cyaniris musina, Snellen, Tijd. v. Ent. XXXV. p. 145 (1892).

Mt. Kina Balu (Waterstradt); Sarawak: Paku, Mt. Matang, Mt. Santubong—2,600 ft. (Sar. Mus.).

Outside Borneo it has been recorded from Sumatra and Java.

The Indian examples recorded under this name by de Nicéville and Bingham have been recently described by Swinhoe (*Lep. Ind.* Vol. VII. p. 205, pl. 619. figs. 3, a, b. 1910) under the name *musinoides.* Chapman places this species provisionally in the genus *Notarthrinus,* and says of it "...... *musina* would be an ancestral form, hardly yet a *Lycaenopsis.*"

Very common on the summit of Mt. Matang on some days.

296a. *Lycaenopsis* (*Notarthrinus*) *musina lugra,* H. H. Druce.

Cyaniris lugra, H. H. Druce, Proc. Zool. Soc. Lond. p. 573, pl. XXXII. fig. 5, ♂ (1895).

Mt. Kina Balu (Waterstradt).

Chapman regards it as "a geographical race of *musina.*"

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[1] Dr. T. A. Chapman has shown how the name *Lycaenopsis,* Feld. has priority over the long-used name, *Cyaniris,* Dalm. I have therefore used it here and also followed Dr. Chapman's valuable paper (*Proc. Zool. Soc. Lond.* 1909, pp. 419-476) for the classification of this genus.

Sub-genus, *Neopithecops,* Distant.

297. *Lycaenopsis* (*Neopithecops*) *zalmora,* Butl.

Pithecops zalmora, Butler, Cat. Fabr. Lep. B. M. p. 161 (1869).

Pihtecops hylax, Moore (*nec* Fabr.), Proc. Zool. Soc. Lond. p. 587 (1877).

Pithecops dharma, Moore, Lep. Ceyl. Vol. I. p. 72, pl. XXXIV. fig. 4, ♂ (1881).

Parapithecops gaura, Moore, Journ. As. Soc. Beng. p. 20 (1884).

Neopithecops horsfieldi, Distant, Rhop. Malay. p. 210, pl. 22, fig. 15, ♂ (1884).

Labuan (Low); Limbang, Banting, Samarahan, Kuching, Mt. Matang—3,200 ft., Mt. Penrissen[1] (Sar. Mus.); South-East Borneo (Doherty).

Distribution: India, Ceylon, Andamans, Burma, Singapore, Sumatra, Sumbawa.

Bingham says: "this form is subject to much seasonal variation. The type in the British Museum is a specimen intermediate between the wet and the dry season broods, in which the disc of the fore-wing on the upperside is much paler, with a small spot of white in the middle."

In Borneo the seasons are not very definitely marked: though the "landas" or "wet season" sets in about October and usually lasts until February or March. An examination of 12 specimens in the Sarawak Museum shows that the seasonal differences cannot be relied on much; thus a typical wet-season form was taken in July and another in June and a third in May; of the remainder, two taken in April and May have the white on the fore-wing of the dry-season but the hind-wing is typically wet-season; only two taken in June and August are typical of the dry-season, and the other five taken in January, April and October, are typical of the wet-season. Mr. Shelford suggests in explanation, "that the colouring of the butterflies exhibiting seasonal changes is determined by the state of the weather during the early stages of the life-history, so that a wet August (for example) would produce the wet-season form, a dry August the dry-season form."[2]

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[1] Mr. Shelford gives an interesting account of the butterflies of this mountain in Journal No. 35. *Str. Br. Roy. Asiat. Soc.* 1901, pp. 29-42. He notices the distinctive character of the fauna of Penrissen as shewn by his collections there, and at the same time comments on the unexpected scarcity of butterflies as compared with those found on the mountains near Kuching,—Mts. Matang and Santubong. His small total of 9 species of Lycaenidae captured in one month's collecting is certainly illustrative of this; and my own experience there on a short trip in November 1909 was the same. (Mr. Shelford made his expedition there in May 1899.)

[2] *l. c.* p. 33.

Chapman writes of this sub-genus and the next: "...... they appear to me to be undoubted Lycaenopsids." Dr. Chapman has not yet had an opportunity of examining the next species, *Neopithecops oskewa,* mihi, and I refer it to this sub-genus with some hesitation.

298. *Lycaenopsis* (*Neopithecops*) *oskewa,* n. sp.

MALE. *Upperside.* Dark fuscous brown; a small pale iridescent-blue discal patch in the fore-wing. *Underside.* Greyish-white. *Fore-wing:* a transverse thin brown line marks the end of cell; a post-discal line composed of six internervular brown striae; of which the first is situated further from the hind-margin than the others; the next two join; the fourth points downwards and outwards, the fifth and sixth very nearly join. Exterior to this row is a sub-marginal border of internervular lunules outwardly bordered by a row of darker spots; a thin dark line along the outer edge of hind-margin. Cilia of ground-colour. *Hind-wing:* a small dark sub-costal spot at base, followed by another much larger sub-costal spot towards the apical angle; immediately below this, a small brown spot; a thin transverse line at end of cell as in fore-wing; an irregular post-discal line of small brown spots; the first two of which are between the discocelluars; of the next three; one below each of the three median nervules and the last on the inner margin. The second median-nervular spot is placed nearer the base. Sub-marginal border and cilia as in fore-wing.

FEMALE. Only differs from the male in having a larger and better defined discal patch of iridescent blue-white in the fore-wing.

Exp. al. ♂, 22-24 mm.; ♀, 25 mm.

Types, ♂ and ♀, Kuching, Sarawak (Sar. Mus.).

Sarawak: Marapok Mts. and Kuching (Sar. Mus.).

Mr. H. H. Druce kindly examined this species and reported that it was not in the British Muesum or known to him.

Sub-genus, *Megisba,* Moore.

299. *Lycaenopsis* (*Megisba*) *malaya,* Horsf.

Lycaena malaya, Horsfield, Cat. Lep. Mus. E. I. C. p. 70 (1828).

Megisba thwaitesi, Moore, Lep. Ceyl. Vol. I. p. 71, pl. XXXIV. figs. 3, 3a, 3b (1881).

Megisba sikkima, Moore, Journ. Asiat. Soc. Beng. p. 21 (1884).

Pathalia albidisca, Moore, *t. c.* p. 21 (1884).

Megisba gunga, Swinhoe, Proc. Zool. Soc. Lond. p. 133, pl. XIX. fig. 7 (1885).

Sandakan (Pryer); Trusan, Limbang, Buntal, Mt. Matang —2000 ft. and Bau (Sar. Mus.).

Distribution: India and Malaya.

De Nicéville states that it is the tailed form which occurs in Sumatra and Borneo; and the four examples in the Sarawak Museum bear this out. Of these seven specimens, three taken in April and May have the white oblique patch in the fore-wing indicative of the dry-season, three taken in April, June and July are typically wet-season, while the seventh captured in November has it more intermediate in character. In none of them is the white extended to the hind-wing.

Sub-genus, *Lycaenopsis,* Chapman.

300. *Lycaenopsis* (*Lycaenopsis*) *shelfordi,* de Nicév.

Cyaniris shelfordi, de Nicéville, Journ. Bomb. Nat. Hist. Soc. XIV. p. 245, pl. F F. fig. 7, ♂ (1902).

Sarawak: Mt. Matang—3,200 ft. (Sar. Mus.).

This species is fairly common on the top of Mt. Matang, and it occurs at the foot of the mountain; taken all the year round. The top of Matang is a small plateau some 50 ft. square, devoid of any trees, but mostly covered with low-growin shrubs, over which *shelfordi* flies slowly in the sun. It is on the wing from 11 to 2 p.m. and probably longer if the sun is not concealed by mist or thick clouds; on some days it is to be met with in abundance.

301. *Lycaenopsis* (*Lycaenopsis*) *haraldus,* Fab.

Papilio haraldus, Fabricius, Mant. Ins. Vol. II. p. 82 (1787).

Lycaenopsis ananga, Felder, Reise, Nov. Lep. Vol. II. p. 257, n. 303, pl. XXXII. figs. 10, 11 (1865).

Cupido cornuta, Druce, Proc. Zool. Soc. Lond. p. 349, pl. XXXII. fig. 5, ♀ (1873).

Labuan (Low and Wahnes); Banting, Kuching, Mt. Matang, Santubong (Sar. Mus.).

Distribution: Malacca, Sumatra and Java.

Distant remarks that "the female appears to be at least difficult of capture, as it is rare in collections." And Druce says, "apparently a scarce insect in Borneo,[1] as I have seen three female specimens only—two, including the type of *C. cornuta,* which does not differ in anything from females from Malacca and Java, in Messrs. Godman and Salvin's collection, and one sent by Dr. Staudinger." Up to the end of 1909 there were but 5 (all males) in the Sarawak Museum; but the year 1909 seems to have been more favourable for them, as no less than eleven specimens (six of which were females) were added during that year and several more have been taken since, mostly from well-collected over localities round Kuching; it seems to frequent old jungle only, and the female, flying low and slowly, is easy to capture. Taken all the year round. Variable in size but not in markings.

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[1] De Nicéville and Martin also remark on its rarity in their "Butterflies of Sumatra."

302. *Lycaenopsis* (*Lycaenopsis*) *ripte*, H. H. Druce.

Cyaniris ripte, H. H. Druce, Proc. Zool. Soc. Lond. p. 574, pl. XXXII. fig. 11, ♂ (1895).

North Borneo and Ulu Madihit (Sar. Mus.); Labuan (Low). "I believe this is the only *Cyaniris* with a spot in the cell of fore-wing below" (Druce).

303. *Lycaenopsis armenta*, Fruhst.

Cyaniris armenta, Fruhstorfer, Stett. entomol. Zeit. p. 287 (1910).

North Borneo, Lawas, South-East Borneo (coll. Fruhstorfer).

304. *Lycaenopsis* (*Lycaenopsis*) *puspa*, Horsf.

Polyommatus puspa, Horsfield, Cat. Lep. E. I. C. p. 67 (1828).

Polyommatus lavendularis, Moore, Ann. Mag. Nat. Hist. ser. 4. xxi. p. 341 (1877).

Sandakan (Pryer); Labuan (Low); Lawas, Marapok Mts., Limbang, Banting, Padang, Quop, Santubong, Kuching (Sar. Mus.).

Distribution: India and Malaya, including Ceylon, Andaman Isles, and the Philippines.

A large series in the Sarawak Museum does not show any seasonal differences, though the specimens have been taken in most months of the year. The only point of variety is the lower sub-costal spot on the underside of the hind-wing, which in many specimens is well-developed, agreeing with Bingham's figure of the species in *Fauna Brit. India*, but in others it is much reduced and in two it is absent altogether.

There is a curious female (the only ♀ in the series) which has been identified as *C. puspa* on account of the correct markings and colour of the underside; the upper side of which is black, except for a slight discal patch of iridescent blue in the fore-wing, rather like the female *L. transpectus*, Moore, figured by Swinhoe (*Lepidopt. Ind.* Vol. VII. pl. 620, fig. 1a, 1910).

304a. *Lycaenopsis* (*Lycaenopsis*) *puspa lambi*, Dist.

Polyommatus lambi, Distant, Ann. Mag. Nat. Hist. ser. 5. x. p. 245 (1882).

Sandakan (Pryer).

Distribution: Malay Peninsula, Nias Island and Sumatra.

Druce, de Nicéville and Swinhoe regard *lambi* as a synonym of *puspa,* but Chapman gives this name subspecific distinction.

305. *Lycaenopsis* (*Lycaenopsis*) *limbata placida,* de Nicév.

Cyaniris placida, de Nicév., Journ. Asiat. Soc. Beng. Vol. LII. Pt. 2 p. 68, n. 3, pl. I. fig. 8, ♂ (1883).

Sarawak: near Batu Lawi, Limbang, Mt. Saribu, Mt. Matang, Mt. Penrissen, Mt. Santubong, Mt. Lingga and Kuching (Sar. Mus.). First record for Borneo.

Distribution: Sikkim, Assam, Khasi Hills, Tenasserim, Penang and Sumatra.

Two females in the Sarawak Museum are considerably darker on the upperside than in the description given by Bingham though he admits (*l.c.*) that he is in doubt as to his female specimens. In the Sarawak examples the general colour is a dull fuscous black, relieved discally in the fore-wing by an oblong patch of blueish-white slightly iridescent; the hind-wing similar, though the patch is much reduced. In the fore-wing there is a small black spot at the end of cell.

306. *Lycaenopsis* (*Lycaenopsis*) *strophis,* H. H. Druce.

Cyaniris strophis, H. H. Druce, Proc. Zool. Soc. Lond. p. 573, pl. XXXII. fig. 4, ♂ (1895).

Mt. Kina Balu (Waterstradt); Mt. Penrissen (Sar. Mus).

Druce (*l.c.*) asks, "Can this be a seasonal form of *C. dilectissima?* On the underside they are almost identical, but on the upperside the hind-wings are strikingly different."

Chapman on the other hand suggests that it may turn out to be a form of *limbata;* while a third suggestion comes from Fruhstorfer who places it provisionally as a sub-species of *singalensis,* Felder.

307. *Lycaenopsis* (*Lycaenopsis*) *dilecta,* Moore.

Polyommatus dilectus, Moore, Proc. Zool. Soc. Lond. p. 139 (1879).

Sarawak: near Batu Lawi and Mt. Matang—3,200 ft. (Sar. Mus.).

This is the first record for Borneo. The males were very common along the mountain streams between Madihit and Batu Lawi.

Distribution: Himalayas; Simla to Sikkim; Assam; Upper Burma; Arracau.

The only difference between the Sarawak examples and the described form is that the paleness in the centre of the disc of the fore-wing and upper discal area of the hind-wing is barely perceptible in the Sarawak specimens; though as this characteristic varies with the seasonal forms, this slight difference does not separate them from that species.

308. *Lycaenopsis* (*Lycaenopsis*) *camenae,* de Nicév.

Cyaniris camenae, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. IX. p. 278, pl. O. fig. 22, ♂ (1895).

Cyaniris selma, H. H. Druce, Proc. Zool. Soc. Lond. p. 573, pl. XXXII. fig. 10, ♂ (1895).

Mt. Kina Balu (Waterstradt); Kuching, Paku, Mt. Penrissen—3,500 ft. (Sar. Mus.).

Also occurs in Sumatra, where it is "the commonest species of the genus" (de Nicéville and Martin).

Fruhstorfer suggests that *selma* may be a sub-species of *coelestina,* Kollar.

309. *Lycaenopsis* (*Lycaenopsis*) *dilectissima,* H. H. Druce.

Cyaniris dilectissima, H. H. Druce, Proc. Zool. Soc. Lond. p. 571, pl. XXXII. figs. 2, 3 (1895).

Mt. Kina Balu (Everett and Waterstradt).

Fruhstorfer regards this species as a sub-species of *ceyx,* but Chapman finds the male ancillary appendages different.

310. *Lycaenopsis* (*Lycaenopsis*) *plauta,* H. H. Druce.

Cyaniris plauta, H. H. Druce, Proc. Zool. Soc. Lond. p. 574, pl. XXXII. figs. 8, 9, ♂ and ♀ (1895).

Mt. Kina Balu (Waterstradt and Everett); Labuan (Low); Limbang, Mt. Saribu, Mt. Penrissen, Paku (Sar. Mus.).

Only found in Borneo.

There are some variations in the males of this species. First, the dark marginal band of the hind-wing can become quite broad as in Sarawak examples or reduced to a marginal row of dark spots as in Druce's figure. Again, the white on the upper surface of the hind-wing varies a good deal; Druce comments on one from Mt. Kina Balu (3,000 ft.) in which this white patch on the apex of the hind-wing has almost disappeared. In the Sarawak Museum specimens it is much reduced. All the Sarawak examples have a small dark spot over the cell on the underside of the hind-wing, which is not figured by Druce though he writes that the black spots are arranged much as in *placida,* which has this spot.

311. *Lycaenopsis* (*Lycaenopsis*) *sonchus,* H. H. Druce.

Cyaniris sonchus, H. H. Druce, *op. cit.* p. 655, pl. XXIX. fig. 4, ♂ (1896).

Kuching, ♀ (Sar. Mus.); S. E. Borneo (Wahnes).

Chapman suspects that this species is but a form of *plauta,* having found the male appendages to be identical. He suggests however, that possibly he may not have had true *sonchus* to examine.

Druce describes the species from a male only, but the single female in the Sarawak Museum differs so much from the female *plauta* that a brief description should be of interest; and for this reason I prefer to keep the two species distinct until further evidence to the contrary is forthcoming.

Upperside. Ground-colour of dark fuscous-brown: with large white discal patches, which are lightly covered with pale-blue iridescent scales. *Fore-wing:* sharply defined discal patch begins at base of first median nervule, extends upwards into outer end of cell, continuing outwards to meet third median nervule 4 mm. from hind-margin, leaving a marginal border of ground colour, which diffuses slightly at inner margin. *Hind-wing:* costal margin of ground-colour reaching sub-costal nervure and extending along first sub-costal nervule towards apex; a broad hind-marginal band of ground-colour from a little below apex across to inner margin, occupying nearly a half of the wing. Hind-marginal border of inter-nervular dark fuscous round spots inwardly edged with a few light scales; remaining portion of the wing occupied by white discal patch. Cilia whitish.

Underside: as in male except for the presence in the hind-wing of a small brown spot immediately below the outer large sub-costal spot; this is absent in Druce's figure of the male.

Exp. al. 31 mm.

312. *Lycaenopsis* (*Lycaenopsis*) *melaena,* Doherty.

Cyaniris melaena, Doherty, Journ. Asiat. Soc. Beng. p. 434, pl. XXIII. fig. 13, ♂ (1889).

Sarawak: Kuching (Sar. Mus.).

Distribution: Southern Tenasserim, Malacca and Sumatra.

313. *Lycaenopsis* (*Lycaenopsis*) *tenella placidula,* H. H. Druce.

Cyaniris placidula, H. H. Druce, Proc. Zool. Soc. Lond. p. 572, pl. XXXII. figs. 6, 7, ♂ and ♀ (1895).

Mt. Kina Balu (Waterstradt); Mt. Marapok (Ind. Mus.); Kuching and Mt. Penrissen—3,500 ft. (Sar. Mus.).

Druce remarks that it is closely allied to *C. placida;* de Nicéville and Fruhstorfer treats it as a sub-species of *placida;* but Chapman having examined the ancillary appendages regards it as a local race of *tenella,* Miskin.

Druce further observes: "Apparently plentiful where it occurs. There seems to be practically no variation, judging from the specimens I have examined."

There are only three examples in the Sarawak Museum, two from Mt. Penrissen after three weeks' arduous collecting in May 1900 by Messrs. Shelford and Cox together with four or five native collectors and a third taken near Kuching in August 1911; so that apparently it is *not* very plentiful in the Sarawak localities.

314. *Lycaenopsis lingga*, sp. n. (Fig. 5, ♀).

Female. *Upperside.* Dark fuscous with white discal patches. *Fore-wing:* the white discal patch is larger than in female *haraldus;* reaches the inner margin leaving an even border of fuscous—some 2 mm. wide—from base along costa, widening at apex and continuing evenly along hind-margin. *Hind-wing:* the white discal patch continues widely from costa, narrowing at inner margin, leaving small basal patch of fuscous and a broad hind-marginal border, widest at anal angle and narrowing towards apex. *Underside.* Creamy-white. *Fore-wing:* a small indistinct dark spot just below the sub-costal nervure, half-way between apex of cell and apex of wing; two small elongate dark spots below first and second median nervules; the usual outer border composed of fuscous lunular line, subterminal line of transverse spots and thin dark anteciliary line. *Hind-wing:* dark sub-basal spot immediately below costal nervure, a smaller one below it in cell, just above junction of first median nervule and median nervure. A larger dark spot on costa near apex, with very small spot immediately below: this post-discal series is continued by four spots shifted further outwards, but inclining inwards and growing larger towards the fourth (*i.e.,* sixth of the post-discal series). Hind-marginal border as in fore-wing. Cilia fuscous. Antennae black-brown ringed with white. Head, thorax and abdomen black-brown above, creamy-white below.

Exp. al. 25 mm.

Type. Female (and only known specimen), Mt. Lingga, Sarawak (Sar. Mus.).

Dr. Chapman kindly examined this and the next species for me.

315. *Lycaenopsis nigerrimus*, sp. n.

Male.[1] *Upperside.* Uniform dark fuscous. Cilia whitish. *Underside.* Whitish. *Fore-wing:* costal margin slightly tinged with fuscous, a short slender dark line closing cell; a post-discal regular transverse series of six short fuscous inter-nervular lines, the first slightly shifted (and well sloped) inwards, the third sloping outwards, the fourth shifted outwards, followed by typical fuscous lunular line and sub-terminal series of spots. *Hind-wing:* a short slender fuscous line closing cell; a very dark-brown sub-costal spot—the first of a post-discal series of eight (the remaining seven of which are smaller and lighter brown); the second is pale and immediately below the first; the third and fourth shifted outwards, the fifth slightly inwards, the sixth and eighth more so; the seventh larger and elongate, shifted outwards; lunular line and subterminal series of spots as in fore-wing, but spots more distinctly defined.

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[1] This specimen was entered as a male in the Museum catalogue by Mr. Shelford. Unfortunately the body has since been lost, so verification is now impossible.

Exp. al. 29 mm.

Type. Male (and only known example) Kuching, Sarawak (Sar. Mus.).

L. nigerrimus and *L. haraldus* are I believe the only Bornean Lycaenopsids which are without sub-basal spots on the underside of hind-wing, and *nigerrimus* suggests a connecting link between *haraldus* and other Bornean species of *Lycaenopsis,* which have one general type of underside markings.

316. *Lycaenopsis moultoni,* Chapman.

Lycaenopsis moultoni, Chapman, Trans. Ent. Soc. Lond. p. 184, pl. XXVIII. figs. 5, 6, 7 (1911).

Sarawak: Kuching and Mt. Santubong—2,600 ft. (Sar. Mus.).

Type ♂ from Sarawak in British Museum; co-type in Sarawak Museum.

There is a single specimen in the Sarawak Museum very like the male of this species which I take to be its female. It differs in the following points:

(i) the hind-marginal border on the upperside of fore-wing is continued evenly to costa, not broadened at apex as in male;

(ii) the hind-marginal border of the hind-wing is broader than in the male;

(iii) on the underside of hind-wing the last spot of the post-discal row is shifted further up the inner margin than in the male, so as to form a third spot to the basal row, rather than the last spot of the post-discal row;

(iv) the spot in cell is rather more pronounced;

(v) the colouring is the same, but the forewings are more rounded, not so pointed as in the male.

Exp. al. ♀ 20 mm.; ♂ 20-27 mm.

The male was taken fairly commonly near Kuching in March 1911.

317. *Lycaenopsis matanga,* Chapman.

Lycaenopsis matanga, Chapman, Trans. Ent. Soc. Lond. p. 185, pl. XXVIII. figs. 1-4 (1910).

Sarawak: Kuching—taken in January, February, April, July and November (Sar. Mus.).

Type, ♂, (from Sarawak) in British Museum; co-type in Sarawak Museum.

Six examples before me agree exactly in colour and markings with the co-type, in which the fore-wing area of blue is rather violet, that of the type being greenish.

318. *Lycaenopsis delapra*, sp. n.

MALE. *Upperside.* Dark fuscous with discal region light green-blue. *Fore-wing:* the blue discal patch reaches from inner margin upwards to median nervure, and beyond third median nervule (but not in cell) to sub-costal nervure where it merges into the fuscous border, thus leaving a broad, even—except for abrupt interruption at end of cell—fuscous border from base through cell along costa and hind-margin. *Hind-wing:* broader fuscous margin from base along costa and hind-margin, slightly narrower along the inner margin enclosing a small discal patch of light green-blue scales. *Underside.* Grey-white. *Fore-wing:* costal, apical and upper hind-marginal region grey, remainder lighter. A slender fuscous line closing cell, a regular post-discal series of five internervular fuscous spots, the upper three very small (in another example these are obsolescent); no spot below the first median nervule; an outer border composed of lunular line, subterminal line of transverse spots and thin dark anteciliary line. *Hind-wing:* grey-white. Two very dark sub-basal spots, one below costal nervure and the other in cell; a slender line closing cell; a post-discal series of 8 spots, the first of which is large and dark and immediately below the costa, the second smaller and lighter—below it, the third small and shifted outwards together with the fourth and fifth, the sixth larger and shifted in, the seventh shifted out and the eighth well in on the inner margin: an outer border of continuous lunular line followed by subterminal line of dark transverse spots and thin ante-ciliary line. Cilia fuscous. Antennae black, ringed with white. Head, thorax and abdomen above black-fuscous, below whitish.

Exp. al. 29 mm.

Type. Male. Matang Road, near Kuching, Sarawak (Sar. Mus.).

A second example (the only other known)[1] from Mt. Matang, Sarawak. This last measures 35 mm. across the wings.

Fore-wings pointed as in *L. matanga*, Chapman. The curious light green-blue of the upperside and the sharp interruption of fuscous border at the end of cell, give this species an appearance very distinct from any other Bornean or Indian Lycaenopsid.

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1. I am inclined to think that Dr. Chapman has described & figured two distinct species under the name *matanga*, although he notices no differences in the appendages. His description of a specimen with greenish-blue in fore-wing, extending beyond the cell, & of diminished markings on the underside of fore-wing, agrees well with my *delapra*, as does his fig. 1, which however is in no way like the co-type returned to me by Dr. Chapman. The six *matanga*, while agreeing well with one another, differ consistently on both upper & underside from the two *delapra*. I suggest that on comparison of all the specimens, my *delapra* will prove to be the same as the type of *matanga*, Chapman (now in the British Museum) and that the co-type of *matanga*, Chapman, will have to be regarded as a separate species under a new name.

Genus, ZIZERA, Moore.

319. *Zizera otis,* Fab.[1]

Papilio otis, Fabricius, Mant. Ins. Vol. II. p. 73 (1787).
Polyommatus sangra, Moore, Proc. Zool. Soc. p. 772, pl. 41, fig. 8, ♂ (1865).
Lycaena lysizone, Snellen, Tijd. voor Ent. XIX. p. 152, n. 491, pl. VII. figs. 2, 2a (1876).

Sandakan (Pryer); Labuan (Wahnes and Waterstradt); Mt. Marapok (Ind. Mus.); Sarawak (Sar. Mus.).

Distribution: India; Ceylon; Burma and Assam to Java; China.

One of the commonest "blues" in Sarawak; being found flying a few inches above any cut lawns in great profusion.

"Abundant, in full blaze of sunshine." (Distant and Pryer, *Ann. Mag. Nat. Hist.* ser. v. 112, p. 267, 1887).

Genus, NIPHANDA, Moore.

320. *Niphanda reter,* H. H. Druce.

Niphanda reter, H. H. Druce, Proc. Zool. Soc. Lond. p. 576, pl. XXXII. fig. 12, ♂ (1895).

Mt. Kina Balu (Waterstradt).

This is the only member of the genus *Niphanda,* described from the Malay Archipelago. Druce says it is nearly allied to a Sikkim species—*N. cymbia,* de Nicév.

Genus, LYCAENESTHES, Moore.

321. *Lycaenesthes emolus,* Godt.

Polyommatus emolus, Godart, Encycl. Meth. IX. p. 656 (1823).
Lycaenesthes bengalensis, Moore, Proc. Zool. Soc. Lond. p. 773, pl. XLI. fig. 9, ♂ (1865).

Labuan (Low and Wahnes); Lawas, Trusan, Limbang, Quop, Tambak, Kuching, Lundu (Sar. Mus.); S. E. Borneo (Wahnes).

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[1] Since writing the above I have received Dr. Chapman's interesting paper "On *Zizeeria*, a group of Lycaenid Butterflies" published in the Transactions of the Entomological Society of London (1910, pp. 479-497). He points out that the name *otis*, Fab. has been used for two species viz: *indica*, Murray and *labradus*, Godt. with its vars. *sangra*, Moore, and *dryina*, Chapman. And rof these species he proposes the generic (or sub-generic name of *Zizina*). Dr. Chapman points out "the Fabrician description also rather favours *sangra* than *indica*," and the Sarawak examples agree well in markings with the example of *labradus* var. *sangra* as figured by Dr. Chapman (*l. c.* Pl. LII. fig. 5), so I prefer to retain the older name *otis* until further evidence is brought forward for dropping it.

Distribution: India and Malaya to New Guinea and North Australia.

This species does not appear to be rare in western Sarawak, but it is scarcer further north.

322. *Lycaenesthes lycaenina,* Feld.

Lycaenesthes lycaenina, Felder, Verh. Zool.-bot. Ges. Wien. xviii. p. 281 (1868).
Lycaenesthes lycambes, Hewitson, Ill. Di. Lep. p. 220, pl. XC. figs. 11, 12, ♂ (1862-1878).
Lycaenesthes orissica, Moore, Journ. Asiat. Soc. Beng. p. 23 (1884).

Sandakan (Pryer); Kuching, Tambak, Mt. Matang—3,200 ft., Quop (Sar. Mus.); S. E. Borneo (Wahnes).

Distribution: India and Ceylon to Malay Peninsula.

Genus, LUTHRODES, H. H. Druce.

323. *Luthrodes mindora,* Felder.

Lycaena mindora, Felder, Reise Nov. Lep. II. p. 277. t. 34, figs. 9, 10 (1865).
Cupido aruana, Druce (*nec* Felder), Proc. Zool. Soc. Lond. p. 349 (1873).

Sandakan (Pryer—Sar. Mus.); Labuan (Low).

Genus, EVERES, Hübner.

324. *Everes argiades,* Pallas.

Papilio argiades, Pallas, Reise, Vol. I. App. p. 472 (1771). (1771).
Hesperia parrhasius, Fabricius, Ent. Syst. Vol. III. p. 289 (1793).
Polyommatus lacturnus, Godt. Enc. Méth. IX. p. 66a (1823).
Lycaena dipora, Moore, Proc. Zool. Soc. Lond. p. 506, pl. XXXI. fig. 8, ♂ (1865).

Mt. Kina Balu (Waterstradt); Labuan (Low); Sarawak (Sar. Mus.).

Distribution: The Holarctic Region. India and Ceylon; Malaya to Australia.

Common all over Sarawak and taken all the year round.

The Sarawak Museum specimens show rather an extra development of the subtornal ochraceous yellow patch on the underside of the hind-wing.

Genus, NACADUBA, Moore.

325. *Nacaduba macrophthalma,* Feld.

Lycaena macrophthalma, Felder, Verh. Zool.-bot. Ges. Wien. XII. p. 483 (1862).

Sarawak: Kuching, Mt. Matang—3,200 ft. Taken in February, May and June (Sar. Mus.). Butler[1] records it from Borneo.

Distribution: India, into the Malay Sub-region as far as Australia. De Nicéville remarks that it has the greatest geographical range of all the species of the genus.

A very variable species; and apparently not common in Sarawak. The two males in the Sarawak Museum have additional blue scales at the anal angle to those on the two black anal spots. The female is normal in this respect.

326. *Nacaduba lugine,* Druce.

Cupido pactolus, Druce (*nec* Feld.) Proc. Zool. Soc. Lond. p. 348 (1873).

Nacaduba lugine, H. H. Druce, Proc. Zool. Soc. Lond. p. 577 (1895).

Labuan (Low); Madihit, Kuching and Quop (Sar. Mus.). The female apparently is undescribed.

The four Sarawak specimens were taken in April, May and November.

The single female in the Sarawak Museum has been referred to this species on account of the underside markings, which agree well with those of the male, the only difference being the addition of a small orange spot on the 3rd median nervule of the hind-wing, not quite touching the large black-spotted orange anal patch. The upperside fore-wing is dull violet narrowly margined with fuscous along the costa and broadly along the hind-margin, spreading across the apex; a broad fuscous costal margin in hind-wing, broadening gradually towards apex; a narrow hind-marginal fuscous border intensified by a row of dark internervular spots, inwardly light-edged and outwardly bordered by a white anteciliary line. Base and discal region to inner margin dull violet as in forwing. Cilia and tail dark fuscous, the latter white-tipped.

Exp. al. 31 mm.

Type, ♀, upper waters of the Madihit River, alt. 2000 ft., Limbang district, Sarawak.

327. *Nacaduba angusta,* Druce (Fig. 8, ♀).

Cupido angusta, Druce, *op. cit.* p. 349, pl. XXXII. fig. 9, ♂ (1873).

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[1] *Trans. Linn. Soc. Lond.*, zool. 2nd. ser. vol. I. p. 566 (1877).

Nacaduba kerriana, Distant, Ann. Mag. Nat. Hist. ser. 5. XVII. p. 293 (1886); id. Rhop. Malay. p. 455. pl. 42, fig. 12, ♂ (1886).

Labuan (Low); Kuching and Santubong (Sar. Mus.).

Distribution: Tenasserim, Burma, Malay Peninsula and Sumatra.

From an examination of five specimens in the Sarawak Museum I have no hesitation in making *N. kerriana,* Distant, synonymous with this species. Druce[1] suggested this course, but could not be certain without examining a specimen. In discussing *kerriana* he says (*l.c.*) "the underside of the figure given in Rhop. Malay. appears to agree well with that of *N. angusta* but the upperside has a broader black outer margin." The Sarawak specimens have a very slightly narrower black margin than in Distant's figure, and the fuscous spots along the hind-wing are almost obsolete on the upperside. As these upperside marginal fuscous bands and markings are always slightly variable throughout this sub-family of Lycaenidae this small difference may be disregarded. The important markings on the underside agree remarkably well with both descriptions of *kerriana* by Distant and Bingham,[2] and with Druce's description of *angusta.* Bingham (*l.c.*) remarks that the female is unknown, so I append a description of the single female in the Sarawak Museum.

FEMALE. *Upperside.* Fuscous: discal portion lighter and relieved by bright iridescent blue. *Fore-wing:* fuscous ground-colour forming broad margin round a discal whitish patch. The upper boundary of this patch starts from base through middle of cell to a point a little short of half-way between end of cell and hind-margin, descends thence to the 2nd-median nervule whence it continues towards the inner margin about 1 millimetre nearer the base. The patch is dull at the base, but gradually becomes lighter towards the hind-margin. In the lightest part, above and below the third median nervule, are two fuscous spots, and slightly nearer the base, above and below the 2nd median nervule, is a similar pair of slightly larger spots. The whole discal patch is iridescent with brilliant light blue scales. *Hind-wing:* a lighter fuscous than in fore-wing; the markings from underside show through and give a slightly mottled appearance. From base along median nervure a few iridescent light blue scales. A hind-marginal border of brown spots between the nervules as mentioned in Distant's description of the male. *Underside.* Similar to that of male, except that the markings are perhaps rather more emphasized.

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[1] *Proc. Zool. Soc. Lond.* p. 578 (1895).

[2] *Fauna Brit. Ind. Butterflies,* Vol. II. p. 384 (1907).

Exp. al. 31 mm.
Type, ♀, Kuching, Sarawak (Sar. Mus.).

328. *Nacaduba pavana,* Horsf.

Lycaena pavana, Horsfield, Cat. Lep. Mus. E. I. C. p. 77 (1828).

Sandakan (Pryer); Kina Balu (Waterstradt); Labuan (Low); Limbang, Malinau, Banting, Kuching, Mt. Santubong, Simatan, Mt. Matang and Mt. Penrissen (Sar. Mus.); South Borneo (Ind. Mus.).

Distribution: Sikkim, Assam, Burma, Sumatra and Java.

In Sarawak it seems to be essentially a mountain species, for out of 16 species in the Sarawak Museum, 11 are from an altitude of 2,600 ft. to 3,500 ft.

The females vary in the amount of iridescent blue in the hind-wing. In some there is hardly any, while in one from Simatan the whole of the discal portion in both wings is blue.

329. *Nacaduba, bhutea,* de Nicév.

Nacaduba bhutea, de Nicéville, Journ. As. Soc. Beng. p. 72, pl. I. fig. 13, ♂ (1883).

Mt. Kina Balu (Waterstradt and Everett); Labuan (Low); Limbang (Sar. Mus.).

Outside Borneo it occurs in Sikkim.

I here follow Mr. Druce in accepting this and the next two species as three distinct species although Butler has thrown doubt upon the validity of *N. bhutea,* and de Nicéville upon *N. aluta.* A comparison of the male ancillary appendages as studied by Dr. T. A. Chapman in the genus *Lycaenopsis* (*Cyaniris*) would be of great value and interest.

330. *Nacaduba ardates,* Moore.

Lycaena ardates, Moore, Proc. Zool. Soc. Lond. p. 574, pl. LXVII. fig. I. (1874).

Lycaena noreia, Felder, Verh. Zool.-bot. Ges. p. 282 (1868).

Sandakan (Pryer); Labuan (Low); Limbang, Quop, Matang, Kuching, Santubong, Tambak, Mt. Penrissen, Pangkalen Ampat (Sar. Mus.).

Distribution: India, Ceylon, Andamans and Nicobars; Malaya and Philippines.

The tailed form is characteristic of Borneo; and it is fairly common in Sarawak all the year round. Staudinger records having received the tailless form from Labuan which was described by Felder as *N. noreia.* De Nicéville, who saw the type of this last species, pronounced it to be the tailless form of *N. ardates.* Bingham does not support this view.

331. *Nacaduba aluta,* Druce.

Cupido aluta, Druce, Proc. Zool. Soc. Lond. p. 349, pl. XXXII. fig. 8 (1873).

Sandakan (Pryer); Labuan (Low and Wahnes); Quop, Santubong, Serai, Kuching, Bidi, (Sar. Mus.).

Outside Borneo it occurs in Malacca and the Philippines.

332. *Nacaduba atrata,* Horsf.

Lycaena atrata, Horsfield, Cat. Lep. Mus. E. I. C. p. 78 (1828).

Lycaena kurava, Moore, Cat. Lep. Mus. E. I. C. Vol. I. p. 22 (1857).

Cupido akaba, Druce, Proc. Zool. Soc. Lond. p. 350 (1873).

Lampides prominens, Moore, Ann. Mag. Nat. Hist. (4). XX. p. 341 (1877).

Kina Balu (Waterstradt); Mt. Marapok (Ind. Mus.); Labuan (Low); Limbang, Quop, Kuching, Matang. Santubong (Sar. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).

Distribution: India and Ceylon to Malay Peninsula, Sumatra and Java.

Fairly common in Sarawak throughout the year.

333. *Nacaduba beroë,* Feld.

Lycaena beroë, Felder, Reise Nov. Lep. II. p. 275, pl. XXXIV. fig. 30 (1865).

Sandakan (Pryer); Limbang, Banting, Kuching, Mt. Matang and Mt. Santubong (Sar. Mus.).

Also from Malacca and Philippine Islands.

334. *Nacaduba hermus,* Feld.

Lycaena hermus, Felder, Sitz. Ak. Wiss. Wien. Math. nab. Cl. XL. p. 457, No. 33 (1860).

Lampides viola, Moore, Ann. Mag. Nat. Hist. ser. 4. XX. p. 340 (1877).

Lycaenesthes merguiana, Moore, Journ. Asiat. Soc. Beng. p. 23 (1884).

Mt. Kina Balu (Waterstradt); Trusan, Limbang, Tambak, Santubong, Quop, Kuching (Sar. Mus.); S. Borneo (Ind. Mus.).

Distribution: Sikkim, Southern India, Nilgiris, Ceylon, Assam, Burma, Tenasserim, Andamans, Sumatra, Celebes, Ceram and Key Islands.

The Sarawak specimens were taken in April, May, August and September.

335. *Nacaduba ancyra,* Feld.

Lycaena ancyra, Felder, Sitz. Ak. Wiss. Wien. Mat.-nat. Cl. XL. p. 458 (1860).
Cupido almora, Druce, Proc. Zool. Soc. Lond. p. 349, pl. XXXII. fig. 7 (1873).
Nacaduba pseustis, Doherty, Journ. Asiat. Soc. Beng. Vol. LX. Pt. II. p. 182 (1891).
Nacaduba aberrans, Elwes, Proc. Zool. Soc. Lond. p. 626, pl. XLIV. fig. 6, ♂ (1892).

Mt. Kina Balu (Waterstradt and Everett); Labuan (Low); North Borneo, Limbang, Baram, Lobang and Kuching (Sar. Mus.); S. E. Borneo (Doherty).
Distribution: Burma and the Philippines through Malaya to New Guinea.

Genus, UNA, de Nicéville.

336. *Una usta,* Dist.

Zizera? usta, Distant, Ann. Mag. Nat. Hist. ser. 5, Vol. XVII. p. 531 (1886).

One specimen recorded from Mt. Kina Balu (Waterstradt); Padang, Malinau, Limbang and Madihit (Sar. Mus.); Kuching (Ind. Mus.).
Distribution: India, Malay Peninsula and Sumatra.
Very common on the banks of the upper-waters of the Limbang and Madihit rivers, where hundreds could have been taken when settled close together on certain wet patches of sand or rock in company with *Lycaenopsis dilecta.*

Genus, LAMPIDES, Hübner.

337. *Lampides bochus,* Cram.

Papilio bochus, Cramer, Pap. Exot. IV. p. 210, pl. 391, figs. C. D (1782).

Mt. Kina Balu (Waterstradt); Labuan (Low); Limbang, Quop, Santubong, Kuching (Sar. Mus.).
Distribution: India and Ceylon to Malaya[1] and Australia.
Druce notices that all the Bornean males which he has examined have the blue area of the fore-wing much contracted. These are probably the most typical form as there is a separate race *nicobaricus,* de Nicéville, only found in the Nicobars,

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[1] Not recorded from Sumatra by de Nicéville and Martin in their list (1895).

which has the blue area of the fore-wing much extended. Thus the contraction of this blue area should not be looked upon as abnormal.

338. *Lampides elpis,* Godt.

Polyommatus elpis, Godart, Encycl. Méth. IX. p. 654 (1823).
Lycaena kinkurka, Felder, Verh. Zool.-bot. Ges. Wien. XII. p. 481 (1862).
Cupido alecto, Druce, Proc. Zool. Soc. Lond. p. 348 (1873).
Lampides pseudelpis, Butler, Trans. Linn. Soc. zool. (2) 88 i. p. 547, pl. 68, figs. 8, 9 (1879).

Sandakan (Pryer); Kudat; Mt. Kina Balu (Waterstradt); Labuan (Low); Lawas (Everett); Limbang, Banting, Samaharan, Santubong, Kuching (Sar. Mus.); Nanga Badon (Brussells Mus.).

Distribution: India and Malaya.

There are two very small females in the Sarawak Museum, measuring only 25 mm. across the wings.

339. *Lampides kondulana,* Feld.

Lycaena kondulana, Felder, Verh. Zool.-bot. Ges. Wien. XII. p. 484 (1862).

A single worn male in the Sarawak Museum which Mr. Druce thinks is probably this species.

Distribution: Burma, the Nicobars, Malay Peninsula, Java and Sumatra.

Bingham says this species is probably only a race of *L. elpis,* Godt.

340. *Lampides limes,* H. H. Druce.

Lampides limes, H. H. Druce, Proc. Zool. Soc. Lond. p. 581, pl. XXXII. fig. 16, ♂ (1895).

Mt. Kina Balu (Waterstradt).

Unknown to me.

341. *Lampides virgulatus,* H. H. Druce.

Lampides virgulatus, H. H. Druce, Proc. Zool. Soc. Lond. p. 581, pl. XXXII. fig. 17, ♂ (1895).

Kuching (Sar. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).

Druce described and figured this species from a male (now in Mus. Staud.) the female being then unknown. The two examples in the Sarawak Museum are females and agree well with Druce's description of the underside markings with the exception of this one small difference: in describing the white striae or bands, he says "the 4th extends to the 2nd median nervule, and has a small spot each side of it close to the costa." In the Sarawak specimens the exterior of these two spots is wanting. The colour bordering the black anal spot in the hind-wing is more of an orange-brown hue than the yellow tint in Druce's figure. The upperside much resembles ♀ *elpis,* except that the fuscous marginal band of the fore-wing is more pronounced towards the anal angle than in *elpis.*

Mr. Druce lately examined one of these for me and noted that it was "probably the unknown female of *virgulatus,*" thus supporting my conjecture.

342. *Lampides coruscans,* Moore.

Lampides coruscans, Moore, Ann. Mag. Nat. Hist. (4) XX. p. 341 (1877).

Sarawak: North Borneo, Kuching, Paku, Mt. Matang—3,200 ft. and Quop (Sar. Mus).

Distribution: Ceylon.

This is the first record of this species for Borneo. The series in the Sarawak Museum agrees well with Col. Bingham's description in Fauna British India, except that he says the underside of the male is pale greyish-brown, whereas the Bornean males are dark greyish-brown, and in some cases as dark as the underside of *L. bochus.* The markings agree with the description. In the female the shape of the fuscous margin agrees well with Col. Bingham's description, though this fuscous margin is evidently less developed in the Bornean *coruscans.* Thus he says the outer margin of the blue area starts from the dorsum at three-fourths of its length from the base: but in the specimens before me, this blue area starts quite seven-eighths of the length of dorsum from the base. In the 10 females in the Sarawak Museum this fuscous border varies slightly in the amount of its development so that this discrepancy can hardly be worthy of specific distinction. Six out of eighteen come from the summit of Mt. Matang. These mountain forms have the striae rather less prominent.

343. *Lampides coerulea,* Druce.

Cupido coerulea, Druce, Proc. Zool. Soc. Lond. p. 349, pl. XXXII. fig. 6 (1873).

Lampides bochides, de Nicév. Journ. Bomb. Nat. Hist. Soc. p. 367, pl. F. fig. 15 (1891).

Lampides kankena, Distant, Rhop. Malay. p. 229, Tab. XX. fig. 18, ♂, 11, ♀ (1884).

Kina Balu (Waterstradt); Sandakan (Pryer); Labuan (Low); Sarawak: Mt. Matang and Mt. Santubong (Sar. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).[1]

Also occurs in Sumatra.

344. *Lampides abdul,* Distant.

Lampides abdul, Distant, Rhop. Malay. p. 456, pl. XLIV. fig. 22 (1886).

Lampides marakata, Doherty, Butt. Ind. Vol. III. p. 174, ♂ (1890).

Sandakan (Pryer).

Recorded from Malay Peninsula and Sumatra.

Mr. Druce kindly examined a female of *L. daones,* Druce, for me and he suggests that that species may eventually prove to be *L. abdul,* Dist.

345. *Lampides osias,* Röber.

Plebeius osias, Röber, Iris. i. p. 56, pl. V. fig. 17 (1886).

Lycaena amphyssina, Staud. Lep. Palawan, p. 100, pl. I. fig. 4, ♀ (1889).

Kudat; Labuan (Low); Sibutu (Everett); Banguey Island (Waterstradt).

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[1] In an article entitled "Habits of certain Bornean Butterflies" (*Ann. Mag. Nat. Hist.* Sept. 1889, pp. 209-218) Mr. S. B. J. Skertchly notes that the following genera among the Lycaenidae "alone supply true forest species, that never seek the sunny river-banks or bright glades and clearings:"—*Nacaduba, Lampides, Biduanda and Narathura (Arhopala).* While this statement is generally true, I should add that I have met species of *Lampides* and an *Amblypodia* in open places along river-banks, and by no means infrequently have taken species of *Lampides, Arhopala* and *Biduanda* along sunny paths in low secondary jungle and in sunlit clearings. Mr. Skertchly continues:—"The more plentiful butterflies in the forest are the blues and purples, which frequent the higher undergrowth and have a strong tendency to settle in the middle of leaves which turn their upper surface horizontally. The purples perhaps, such as *Narathura*, are more arboreal than the blues and fly higher, even up to 60 feet; but as a rule the forest butterflies keep pretty low down."

Mr. Skertchly points out that his experiences in North Borneo do not confirm the suggestion "that the rarity of butterflies in the deep forest shade is more apparent than real and that the mass of the individuals are high overhead on the tree-tops;" and he remarks on their scarcity on cleared mountain tops where he had occasion to spend periods of several days together. My experience is very much the opposite of this: the greatest variety of species and quantity of individuals are to be found just on such cleared mountain-tops; in fact my *modus operandi*, when after butterflies, is to go up the nearest mountain, at once have a space on the top cleared, and here one may be almost certain of catching some highly interesting species, which are either very rare or never met with at all in the jungle below. These are to be seen flying over and among tree-tops in the jungle below and great is the excitement when some bright-hued stranger comes hurrying up the mountain-side—to fly within reach of the net, or not?

The repeated mention of localities such as *Mount* Matang, *Mount Lingga Mount* Santubong, etc. etc., throughout this paper will bear me out in this statement, as the majority of species recorded froM those localities were taken in the way described.

Druce records it from Sumatra, and Snellen[1] from Billiton, the island between Borneo and Sumatra.

346. *Lampides celeno*, Cr.

Papilio celeno, Cramer, Pap. Exot. i. pl. 31, figs. C. D (1775).
Hesperia aelianus, Fabr. Ent. Syst. iii. p. 280 (1793).
Lampides agnata, Druce, Proc. Zool. Soc. Lond. p. 106, pl. XVI. figs. 2—4 (1874).

Sandakan (Ind. Mus.); Labuan (Low); Sarawak (Everett); Sarawak: Simanggang, Samarahan, Santubong, Quop, Kuching, Paku and Bau (Sar. Mus.); Ammutai, S. Borneo (Ind. Mus.).

The Sarawak Museum examples are all wet season forms and the underside markings vary a good deal. In one female out of four, the fuscous colouring of the hind-wing extends well into the disc, but in the other two the blue ground-colour predominates.

Very variable both in the ground-colour and in the markings.

Distribution: India and Malaya.

347. *Lampides optimus*, Röber.

Plebeius optimus, Röber, Iris. i. p. 56, pl. IV. fig. 16 (1886).

Kina Balu (Waterstradt); Sandakan (Pryer); Lawas (Everett); Labuan (Low); Tanganac Isle; Paku (Sar. Mus.).

348. *Lampides cleodus*, Feld.

Lycaena cleodus, Felder, Reise Novara, Lep. II. p. 272, pl. XXXIV. figs. 20, 21, 22 (1865).

Sandakan (Pryer); Mt. Marapok and Kuching (Ind. Mus.).

349. *Lampides zebra*, Druce.

Lampides zebra, H. H. Druce, Proc. Zool. Soc. Lond. p. 583, pl. XXXII. fig. 18, ♂ (1895).

Kina Balu (Waterstradt); Labuan (Low); Sarawak (Everett).

A long and variable series in the Sarawak Museum from the following localities:—Lawas, Limbang, Banting, Gadin, Kuching, Busau, Mt. Penrissen—3,400 ft., Quop and Bidi.

This species seems exceptionally close to *L. celeno* and I have found great difficulty in satisfactorily separating the two species in the collection of the Sarawak Museum. Druce himself, in describing the species, threw out the suggestion that it might eventually prove only a variety of *celeno*. Further research on this complex genus is much needed.

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[1] *Notes from the Leyden Museum*. Vol. XIII. p. 139, 1891. "List of the Lepidopterous insects collected by Mr. A. G. Vordeman in the island of Billiton." By P. C. T. Snellen.

The following is a brief description of what I can only regard as a variety or form of *L. zebra,* though the differences are really greater than those noticed between some other "species (?)" of this difficult genus.

349a. var. *lawasa*, nov.

♂ *Upperside:* as in typical *L. zebra,* except that in the fore-wing there is a dark fuscous marginal border starting with a line at anal angle and broadening out to the apex, where it slightly diffuses on reaching costa; the inner end of this border is serrate. In the hind-wing there is a marginal row of black spots outwardly bordered with white between each nervule, that between the 2nd and 1st median nervule being the largest This line of spots is succeeded exteriorly by a thin black line more pronounced than in *zebra.*

Underside: much as in *zebra,* but the third white mark from base is not so straight; and the 5th and 6th are closer together and more lunulate. In the hind-wing the first and second striae are very slightly more apart, the 4th is closer to the 3rd, and the 5th and 6th, as in fore-wing, are much more lunulate.

Described from three males in the Sarawak Museum, taken near Lawas, August and September, 1909.

350. *Lampides lividus,* H. H. Druce.

Lampides lividus, H. H. Druce, Proc. Zool. Soc. Lond. p. 584, pl. XXXII. fig. 20, ♂ (1895).

Mt. Kina Balu (Waterstradt); Labuan (Low); Sarawak: Mt. Matang—2000 ft. (Sar. Mus.).

This is a very distinct species characterized by "the much more elongate fore-wing, the costa being longer, the apex more produced, and the inner margin shorter." (Druce *l.c.*).

Druce in describing the species (1895) wrote that the type, which is in Messrs. Godman and Salvin's collection, was unique. However in 1896 he examined another male from Staudinger's collection, taken on Kina Balu by Waterstradt. It is pleasant therefore to record two examples, also males, from Sarawak.

351. *Lampides aratus,* Cr.

Papilio aratus, Cr. Pap. Exot. Vol. IV. pl. CCCLXV. figs. a, b (1782).

Mt. Kina Balu (Waterstradt); Sandakan (Pryer); Sarawak: Lawas, Limbang, Kuching, Buntal, Tambak, Santubong, Simatan.

Distribution: Malay Archipelago.

The fuscous marginal markings of the female vary in heaviness in Sarawak specimens. Common in Sarawak.

352. *Lampides adana,* Druce.

Cupido adana, Druce, Proc. Zool. Soc. Lond. p. 349 (1873).

Labuan (Low).

H. H. Druce considers this a very doubtful species and that it is probably a form of the preceding species (*L. aratus,* Cr.). Unknown to me.

353. *Lampides daones,* H. H. Druce.

Lampides daones, H. H. Druce, *op. cit.* p. 656, pl. XXIX. fig. 5, ♂ (1896).

Penungah (Cator); Sarawak: Kuching (Sar. Mus.).

354. *Lampides vyneri,* sp. n.

Male. *Upperside.* Pale blueish-white with narrow fuscous hind-marginal border to fore-wing. *Fore-wing:* costa arched as in typical *Lampides* but apex much rounded. Fuscous hind-marginal border serrated on its inner side, and diminishing towards anal angle, disappears just below the end of 2nd sub-median nervule. A very thin dark line outwardly limits the hind-marginal border. Cilia light fuscous. *Hind-wing:* pale blueish-white as in fore-wing, but no hind-marginal border except very thin dark line from apex to anal angle ending at sub-median nervure.

Underside. Light brown fuscous marked with transverse white lines or striae. *Fore-wing:* six transverse white lines arranged as follows:—the first formed by a slender white fascia closing the cell, following below and slightly shifted inwards, a short outwardly oblique fascia from junction of 2nd median nervule to first median nervule, and immediately below this but slightly shifted inwards, another outwardly oblique fascia. The second line runs parallel and exterior to this composite line; the second fascia is longitudinally divided into two and is immediately exterior to the fascia cell, the third fascia rather thick, fourth and fifth continuous, sixth slightly shifted inwards and joining at end with first and third lines. A rather broad strip of ground-colour between 2nd and 3rd lines, of which the latter is continuous from costa to end of 2nd; the 4th very close to 3rd and composed of four lunules, the last of which practically fuses with the 3rd line between 2nd and 3rd median nervules. The 5th and 6th lines continuous and parallel from apex to anal angle, the 5th line being slightly lunulate. A thin dark line completes the hind-margin. Cilia white, outwardly touched with fuscous. *Hind-wing:* ground-colour as in fore-wing with with the following white lines: two parallel lines from costal nervure across centre of cell to median nervure, a short one continued to inner margin; a third line from costal nervure to inner margin, of which the first fascia is outwardly oblique and disconnected, the second closer cell, third inwardly oblique and continuous, fourth split and triangulate, the fourth and fifth lines run parallel from apex to anal angle; of which the first fascia of the forth line is shifted outwards so as to join the second fascia of the fifth line while the first fascia of that line is almost obsolete: the 2nd and 3rd fascia of the fifth line are slightly split longitudinally. The sixth line very lunulate, the seventh thin and continuous as in fore-wing. Cilia as in fore-wing. At anal angle between 1st and 2nd median nervules a dark spot laterally touched with iridescent light green scales and inwardly margined with dark orange; a thin fuscous and white filamentous tail.

Exp. al. 25 mm.

Type, Male[1], Quop, Sarawak (Sar. Mus.).

Described from a single example, and named after H. H. The Rajah Muda of Sarawak.

Mr. H. H. Druce who examined it in June 1910, reported it as unknown to him. It may be easily distinguished from all other species of *Lampides* by the curious position of the white fasciae on the underside.

Genus, THYSONOTIS, Hübner.

355. *Thysonotis schaeffera,* Esch.

Lycaena schaeffera, Esch. Kotzeb. Reise. iii. p. 216, t. 5, fig. 25. a, b (1821).

Labuan (Low); Sandakan.

Genus, CATOCHRYSOPS, Boisduval.

356. *Catochrysops strabo,* Fab.

Hesperia strabo, Fab. Ent. Syst. Vol. III. pt. I. p. 287 (1793).

Sandakan (Pryer); Labuan (Low); Sarawak: Lobang, Simanggang, Kuching and Quop (Sar. Mus.); S. E. Borneo, near Bandjarmasin (Wahnes).

Distribution: India, Philippines, China, Malaya to Australia.

356a. Form, *lithargyria,* Moore.

Catochrysops lithargyria, Moore, Ann. Mag. Nat. Hist. (4) XX. p. 340 (1877).

Sarawak: Lobang, Bidi, Paku, Santubong, Tambak, Kuching (Sar. Mus.).

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[1] Recorded by Mr. Shelford in the Museum catalogue as a male, but the body has since been lost so I am unable to verify this.

Distribution: as the typical form.

From the data on Sarawak examples it appears that this form has been taken in the same locality as the typical *strabo,* but there is not sufficient material to show whether they are taken together in the same month.

357. *Catochrysops pandava,* Horsf.

Lycaena pandava, Horsfield, Cat. Lep. Mus. E. I. C. p. 84 (1829).
Catochrysops nicola, Swinhoe, Proc. Zool. Soc. Lond. p. 132 (1885).

Kudat (Mus. Druce)—A female of the wet-season form.

Distribution: India and Malaya,[1]—Peninsula, Java, Bantam and Natuna Isles.

358. *Catochrysops cnejus,* Fabr.

Hesperia cnejus, Fabr. Ent. Syst. Suppl. p. 430 (1798).
Lampides contracta, Butler, Proc. Zool. Soc. Lond. p. 406, pl. 39, fig. 3 (1880).
Catochrysops ella, Butler, *op. cit.* p. 606 (1881).
Catochrysops hapalina, Butler, *op. cit.* p. 148, pl. 24, figs. 2, 3, ♂ and ♀ (1883).
Catochrysops theseus, Swinhoe, *op. cit.* p. 131, pl. 9, fig. 8, ♂ (1885).

Mt. Kina Balu (Waterstradt); Labuan (Low); Sarawak: Santubong, Kuching, Satap, Quop (Sar. Mus.).

Distribution: India to Malaya, extending to Australia and the South Sea Islands.

The Sarawak specimens vary in size and in the development of the anal spots of the hind-wing in both sexes.

[The larva feeds on *Cycas* plants and does much damage in Singapore Gardens.] R. S.

Genus, TARUCUS, Moore.

359. *Tarucus waterstradti,* H. H. Druce.

Tarucus waterstradti, H. H. Druce, *op. cit.* p. 585, pl. XXXII. fig. 21, ♀ (1895).

Kina Balu (Waterstradt).

Nearly allied to *T. theophrastus,* Fab.

360. *Tarucus plinius,* Fabr.

Hesperia plinius, Fabr. Ent. Syst. iii. p. 284 (1793).

Lawas (Everett).

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[1] De Nicéville and Martin remark on the curious absence of this species from Sumatra.

Distribution: Ethiopian Region in part. N. W. Himalayas to Kumaon, plains of Northern India, Central and Western India, Ceylon, Assam, Burma, Tenasserim (north), China, Formosa and Java. De Nicéville[1] says it does *not* appear in the Malay Peninsula.

Genus, CASTALIUS, Hübner.

361. *Castalius rosimon,* Fabr.

Papilio rosimon, Fabr. Syst. Ent. p. 523 (1775).

Borneo (Wahnes)—probably from Labuan or S. E. Borneo (Druce).

Distribution: Peninsular India, Ceylon, Assam, Burma, Tenasserim, Andamans and Nicobars, Siam, Malay Peninsula and Archipelago.

362. *Castalius ethion,* Doubl. and Hew.

Lycaena ethion, Doubleday and Hewitson, Gen. Di. Lep. ii. p. 490, pl. 76, fig. 3, ♂ (1852).

Sandakan (Pryer); Labuan (Low, Wahnes and Waterstradt); Lawas; Sarawak (Everett); Lawas, Malinau, Samarahan, Matang, Bau, Paku, Serambu and Santubong (Sar. Mus.).

Distribution: Southern India, Ceylon, Assam, Burma, Tenasserim, Siam, Malay Peninsula, Sumatra and Java.

The Bornean forms are typical; the female is rare in Sarawak.

363. *Castalius roxus,* Godt.

Polyommatus roxus, Godart, Encycl. Méth. IX. p. 659 (1823).

Castalius roxana, de Nicév., Journ. Bomb. Nat. Hist. Soc. X. p. 633 (1897).

Lawas (Everett); Borneo (de Nicéville).

Druce[1] writes that he has a single female of this species in his collection; this and de Nicéville's appear to be the sole records for the species in Borneo.

Distribution: Burma, Tenasserim, the Andamans, Philippines, Malay Peninsula, Sumatra and Java.

364. *Castalius elna,* Hew.

Lycaena elna, Hewitson, Exot. Butt. V. pl. I. fig. 8, ♀ (1876).

Cupido roxus, Druce (*nec* Godart), Proc. Zool. Soc. Lond. p. 348 (1873).

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1. *Butt. Ind.* vol. III. p. 195 (1890.)
2. *Proc. Zool. Soc. Lond.* p. 587, 1895.

Kina Balu (Waterstradt); Sandakan (Pryer); Labuan (Low and Wahnes); Sarawak: ulu Lawas and Marapok Mts., Malinau, Kuching and Santubong (Sar. Mus.).

Distribution: Indo-Malaya to Java.

Apparently rather local in Sarawak, but plentiful where it occurs.

The upperside pattern[1] is so remarkably like that of the female *Lycaenopsis haraldus,* that I am inclined to think that these two forms, together with the female *Castalius ethion* and one or two other *Lycaenopsis* females (e.g. *L. lingga, L. sonchus*), form a mimetic association (pseudaposematic, *i.e.,* illustrative of the Batesian hypothesis, in which the Lycaenopsids are probably palatable and gain protection by mimicking the distasteful *Castalius* species).[2]

Genus, POLYOMMATUS, Latreille.

365. *Polyommatus baeticus,* Linn.

Papilio baeticus, Linnaeus, Syst. Nat. ed. XII. i. p. 789 (1767).

Mt. Kina Balu (1200-1500 m. Waterstradt); Sandakan (Pryer); Sarawak: Buntal and Kuching (Sar. Mus.).

Distribution: Europe, Africa, Asia through Malaya to Australia and the Hawaiian Islands.

There are several records of its migratory habits and that, together with the fact that the larva can subsist on many leguminose plants, shows presumably why it is so widely distributed.

The series in the Sarawak Museum was taken at Buntal and Kuching in 1894 and 1896; after that no further specimens seem to have been captured until March and April of this year (1911) when it was met with by no means rarely in the vicinity of Kuching.

Sub. Family III. CURETIINAE.

Genus, CURETIS, Hübner.

This genus has provided much material for discussion on the relative values of the species described under its name; and to quote

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[1] The upperside colouring in both species is a plain but striking pattern of black surrounding a broad discal white band across both wings. In the underside they differ widely: *haraldus* is a somewhat typical *Lycaenopsis* form, while the pattern of *elna* is the typical black and white blotched pattern of *Castalius.*

[2] The only other suggestion of mimicry among Bornean Lycaenidae, that I can find comes from Mr. Shelford, who regards *Thrix gama* as a mimic of *Eooxylides tharis,* and the two species, *Poritia plateni* and *Araotes lapithis* as mimics of the common species, *Drupadia boisduvalii* var. *atra* and *Biduanda thesmia.* In commenting thereon, he writes, "I am, however, quite certaon that *E. tharis, D. boisduvalii* and *B. thesmia* are distarteful species, whilst the great rarity of the mimicking species points to the conclusion that they are Batesian mimics." *Proc. Zool. Soc. Loral.* 1902, p, 263).

Col. Bingham, "until extensive breeding experiments are undertaken it will be impossible to attain any certainty as to whether there are two or a dozen distinct forms." In treating the Indian species, this authority divides them into two species only, and I have endeavoured to treat the Bornean forms in a similar way.

Col. Bingham separates the two species thus:—

A. ♂ ♀. Underside fore-wing: discal and subterminal markings or bands parallel, not anteriorly convergent = *C. thetis.*

B. ♂ ♀. Underside fore-wing: discal and subterminal markings or bands anteriorly convergent = *C. bulis.*

366. *Curetis thetis,* Drury.

Papilio thetis, Drury, Ill. Exot. Ent. ii. p. 16, pl. 9, figs. 3, 4, ♀ (1773).
Papilio phaedrus, Fabr. Sp. Ins. ii. p. 125 (1781).
Curetis saronis, Moore, Proc. Zool. Soc. Lond. p. 587 (1877).
Curetis glariosa, Moore, *op. cit.* p. 522, pl. 48, fig. 1, ♂ (1883).
Curetis arcuata, Moore, *op. cit.* p. 523, pl. 48, fig. 3 (1883).

form (a) *tagalica,* Feld.

Anops tagalica, Feld. Reise Novara, Lep. ii. p. 221, pl. XXVIII. figs. 19, 20 (1865).

Labuan (Low); Banguey Island (Waterstradt).

I have not seen an example of *tagalica,* Feld. but H. H. Druce writes:—"*C. tagalica* is scarcely distinguishable from *C. phaedrus,* Fab., on the upperside, but on the underside Bornean specimens are usually very strongly suffused with blackish brown."

Then Bingham says:—"*C. phaedrus,* Fabr., varies so little from *thetis* as to be scarcely ranked even as a variety." So *C. tagalica* may be regarded as a form only, of *thetis.*

form (b) *nesophila,* Feld.

Phaedra nesophila, Feld. Wien. Ent. Mon. VI. p. 289 (1862).
Curetis barsine, Druce (*nec* Feld.), Proc. Zool. Soc. Lond. p. 353 (1875).

Kina Balu (Waterstradt); Sarawak (Platen); Labuan (Low, Waterstradt and Wahnes); Lawas, Trusan, Limbang, Baram, Banting, Santubong, Kuching, Satap, Quop (Sar. Mus.).

First described from Luzon.

Injury. ♀, quadrate bite from upper part of hind-margin of right hind-wing.

form (c) *insularis,* Horsf.

Phaedra insularis, Horsfield, Cat. Lep. E. I. C. p. 125 (1829).

Kina Balu (Waterstradt).

Distribution: Java, Sumatra and Malay Peninsula.

De Nicéville prefers to treat this as a separate species, but as the parallel fasciae of the underside (shown in Distant's figure) bring it under the definition of *thetys,* I prefer to treat it as another form of that species.

form (d) *minima,* Distant and Pryer.

Curetis minima, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. Vol. XIX. p. 265 (1887).

Sandakan (Pryer).

Described as being near *C. insularis,* Horsf.

form (e) *aesopus,* Fabr.

Papilio aesopus, Fab. Sp. Ins. Vol. II. p. 125 (1781).

Kina Balu (Waterstradt); Labuan (Waterstradt and Wahnes); S. E. Borneo, near Banjarmasin (Wahnes); Sarawak: Kuching and Satap (Sar. Mus.).

The position of *C. aesopus,* Fabr. seems to me rather doubtful. First of all Bingham says of it: "With regard to *C. aesopus,* Fabr., that also falls as a synonym of *C. thetis,* as acknowledged by Fabricius himself. The type, a ♀, is in the Banksian collection now in the British Museum, and is undoubtedly a ♀ of ordinary *C. thetis,* Drury." De Nicéville supports this view having bred females exactly like *aesopus* from *thetis.*

Now in order to completely fulfil Bingham's definition of *C. thetis* the underside fasciae must be parallel; but in Distant's description of *aesopus* he says "anterior wings with a palish blue *oblique* lunulated fascia, etc." and his figures, ♂ and ♀, show typical *bulis* underside with convergent fasciae. He too says he has compared his specimens with Fabricius' type. So the position is this: the author of *aesopus* admits that his own species (*aesopus*) is the same as *thetis;* de Nicéville breeds *aesopus* from *thetis;* Bingham says of *aesopus* "undoubtedly female of ordinary *C. thetis,* Drury." Kirby and Moore also adopt this view. On the other side is Distant, who examines Fabricius' type and then figures a specimen with typical *bulis* underside, though he treats *aesopus* as a distinct species; and Butler supports this view.

Six ♂ examples in the Sarawak Museum agree well with Distant's description and figure for the upperside, but on the underside the two lines of fasciae are not nearly so convergent; though they cannot be called strictly parallel as in typical *thetis.* From the three forms in the Sarawak Museum it seems that *aesopus* is intermediate between *thetis* and *bulis;* de Nicéville comments on the *upperside* markings forming a connecting link and I think the *underside* markings bear that out too.

The following are the characteristics of the three Sarawak Museum forms (only males compared):—

(i) *Upperside:* inner-marginal black border forms a strongly curved arch: the ends of which form an even edging along the costa, and along the hind-margin from 1st median nervule to anal angle. The actual edge of this black margin is slightly irregular, in no two specimens alike, though the general impression is that of an evenly rounded arch. No extension of black along inner margin.

Underside: fasciae parallel
= *C. thetis,* Drury, form *nesophila,* Feld.

(ii) *Upperside:* black marginal border heavier; at a point less than a quarter of the length of costa from the base, the black begins to broaden, extending unevenly to end of cell and across to 2nd median nervule thus forming an angulated inner edge to this marginal border; thence it extends evenly, but twice as broad as in *nesophila,* to anal angle, where it becomes diffuse along a small part of the inner margin.

Underside: fasciae not quite parallel, but suggesting the anterior convergence of typical *bulis* = form *aesopus,* Fab.

(iii) *Upperside:* marginal border more heavily developed; inner edge rather more angular and from 1st median nervule to half way along inner margin the border is developed into an anal patch.

Underside: fasciae sharply convergent
= *C. bulis,* Doubl. and Hew. form, *malayica,* Feld.[1]

367. *Curetis bulis,* Doubl. and Hew.

Anops bulis, Doubleday and Hewitson, Gen. Di. Lep. ii. p. 473, pl. 75, fig. 5, ♂ (1852).

Anops malayica, Felder, Novara Reise, Lep. ii. p. 221, pl. 28, fig. 18, ♂ (1865).

Curetis dentata, discalis et stigmata, Moore, Proc. Zool. Soc. Lond. pp. 137 and 138 (1879).

Curetis angulata, Moore, *op. cit.* p. 522, pl. 48, fig. 2, ♂ (1883).

Curetis felderi, Distant, Rhop. Malay. p. 203, pl. 24, fig. 3, ♂ and pl. 22, fig. 26, ♀ (1884).

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[1] I ought perhaps to state that the above views are put forward after the examination of *Bornean* examples only. These, and other suggestions as to nomenclature throughout this paper, being founded on the examination of *Bornean* specimens only, are intended to serve as material for any future Monograph of Eastern Lycaenidae, rather than presuming to correct the views of other authors of far greater experience and ability than the present writer.

form *malayica,* Feld.

Sandakan (Ind. Mus.); Kina Balu (Waterstradt); Sarawak: ulu Lawas, Baram, Santubong, Quop, Matang—3,200 ft., Kuching, Satap (Sar. Mus.); near Banjarmasin (Wahnes).

Distribution: Sikkim, South Tenasserim, Malacca and Sumatra.

Sub. Family IV. LIPHYRINAE.

Genus, Liphyra, Westwood.

368. *Liphyra brassolis,* Westw.

Liphyra brassolis, Westwood, Proc. Ent. Soc. Lond. (3) ii. p. 31 (1864).

Sterosis robusta, Felder, Novara Reise, Lep. ii. p. 219, pl. 27, figs. 10, 11, ♀ (1865).

Sarawak (Hewitson); Kuching, Mt. Matang—3,200 ft., Santubong (Sar. Mus.).

Distribution: Sikkim to Malay Peninsula, Celebes, Gilolo, Australia.

There are two males and two females in the Sarawak Museum which are rather heavily marked with dark fuscous. In the males this fuscous margin extends over the apical two-thirds of the fore-wing leaving only a small spot of tawny-yellow ground-colour at end of cell besides the basal third of the fore-wing. The females agree well with Distant's figure in *Rhopalocera Malayana;* but are more heavily marked than the female figured by de Nicéville.

The only point to remark is that Bingham says:—"specimens from Malacca and south and east through the sub-region have a decreasing amount of black colouring on the upperside. Australian specimens have the least of all." The Sarawak examples however in this peculiarity are darker than the Indian forms.

The four Sarawak specimens bear no notes as to crepuscular habits. One is noted as being caught "fluttering in the grass" on the summit of Mt. Matang.

[The wings of a ♂ of this species were found lying on the jungle-floor at Trusan, they had evidently been newly dismembered by some bird or reptiles.

The larva lives in the nests of the "Karinga" ant, *Œcophylla smaragdina,* Fab.] R. S.

Sub. Family V. PORITIINAE.

Genus, Poritia, Moore.

369. *Poritia sumatrae,* Feld.

Pseudodipsas sumatrae, Felder, Novara Reise, Lep. ii. p. 259, pl. 36, figs. 24, 25, 26, ♂ and ♀ (1865).

Labuan (Low); Brunei (Waterstradt); Sarawak: Limbang, Kuching and Santubong (Sar. Mus.).

Distribution: South of Tenasserim to Malay Peninsula and Sumatra.

Not rare or variable in Sarawak.

370. *Poritia phormedon,* H. H. Druce.

Poritia phormedon, H. H. Druce, Proc. Zool. Soc. Lond. p. 566, pl. XXXI. figs. 16, ♂, 17, ♀ (1895).

Kina Balu (Waterstradt).

Unknown to me.

371. *Poritia pellonia,* Dist. and Pry.

Poritia pellonia, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. Vol. XIX. p. 265 (1887).

Sandakan.

Near *P. pleurata,* Hew., a Singapore species.

372. *Poritia phaluke,* H. H. Druce.

Poritia phaluke, H. H. Druce, Proc. Zool. Soc. Lond. p. 567, pl. XXXI. fig. 15, ♂ (1895).

Sandakan (Cator); Kina Balu (Waterstradt); Sarawak: Kuching (Sar. Mus.).

373. *Poritia philota,* Hew.

Poritia philota, Hewitson, Trans. Ent. Soc. Lond. p. 346 (1874).

N. E. Borneo (coll. Godman and Salvin); Labuan (Wahnes); Sarawak: Kuching and Lundu (Sar. Mus.).

Distribution: Philippines, Sumatra and Java.

374. *Poritia plateni,* Staud.

Poritia plateni, Staudinger, Iris, ii. p. 104, pl. I. fig. 8 (1889).

Kina Balu (Waterstradt); Sarawak: Kuching—April to June—(Sar. Mus.).

Described originally from Palawan; also recorded from Sumatra.

375. *Poritia phama,* H. H. Druce.

Poritia phama, H. H. Druce, Proc. Zool. Soc. Lond. p. 568, pl. XXXI. fig. 18, ♂ (1895).

Kina Balu (Waterstradt).

Druce also records an example from Java.

376. *Poritia phalena,* Hew.

Poritia phalena, Hewitson, Trans. Ent. Soc. Lond. p. 344 (1874).

Labuan, ♂ and ♀ (Waterstradt); Sandakan, ♀ ♀ (Cator); Sarawak: near Kuching, ♂ and ♀ (Sar. Mus.).

Distribution: Assam, Burma, Singapore and Sumatra.

Mr. Druce kindly identified one of the two females in the Sarawak Museum.

377. *Poritia pheretia,* Hew.

Poritia pheretia, Hewitson, *t. c.* p. 346 (1874).

Sandakan.

378. *Poritia phalia,* Hew.

Poritia phalia, Hewitson, *t. c.* p. 345, ♂ (1874).
Poritia potina, Hewitson, *t. c.* p. 347, ♀ (1874).
Simiskina fulgens, Distant, Entomologist, XIX. p. 12 (1886).

Borneo (Low—Brit. Mus.); Sarawak: Kuching—March to July—(Sar. Mus.).

Distribution: Tenasserim, Malay Peninsula.

The two females in the Sarawak Museum approach the light female figured by Bingham (*Fauna Brit. Ind.* Butterflies ii. p. 468); but the post discal row of spots on the upperside of hind-wing, present in the Sarawak specimens, is absent in Bingham's figure.

379. *Poritia philura,* H. H. Druce.

Poritia philura, H. H. Druce, Proc. Zool. Soc. Lond. p. 569, pl. XXXII. fig. 1, ♂ (1895).

Mt. Kina Balu (Waterstradt); Sarawak: Kuching, ♂ and ♀ (Sar. Mus.).

Druce described this species from a single specimen sent him by Dr. Staudinger. There appears to be no other record of its capture and the female is undescribed.

The Sarawak Museum examples were taken near Kuching in March, May and October (1896) and one in August of this year (1911).

I append a description of the female.

Upperside. Orange-yellow ground-colour; hind-marginal, inner-marginal, and post-discal bands of dark fuscous-brown. *Fore-wing:* ground-colour orange-yellow; a costal edging of dark fuscous—entering the base of cell only—extends along two-thirds of the costa and, traversing the disco-cellulars, meets the third median nervule thus forming a short oblique post-discal fascia. Apex and hind-marginal border, which widens at anal angle, of the same dark fuscous. A broad dark fuscous fascia from base along inner margin narrowing towards hind-marginal border, which it does not quite reach. A few dark fuscous scales join this fascia to the oblique post-discal fascia. *Hind-wing:* ground-colour orange-yellow, paler along the costa.

Basal region fuscous. A dark fuscous band from apex to inner margin, a short hind-marginal band of dark fuscous, interrupted by the nervules, from anal angle to third median nervule, succeeded outwardly by thin edging of ground-colour along the middle of which runs a thin dark fuscous line. Cilia fuscous.

Underside, as in male; perhaps more orange-yellow than the yellow-buff of the male.

Exp. al. 30 mm.

380. *Poritia pharyge,* Hew.

Poritia pharyge, Hewitson, Trans. Ent. Soc. Lond. p. 345 (1874).

Labuan (Wahnes); North Borneo (Ind. Mus.); Sarawak: Lundu and Kuching—March to Sept.—(Sar. Mus.).

Distribution: Siam, Perak, Penang, Sumatra and Java.

The uppersides of two females in the Sarawak Museum are uniform dark fuscous in colour, and the undersides are fuscous agreeing well with the undersides of seven males; but a second female identified by Mr. Druce has the ground-colour of the underside a light straw colour; and the upperside has a well marked purple discal patch in the fore-wing, and traces of that colour in the disc of the hind-wing.

381. *Poritia pasira,* sp. n. (Fig. 2).

Male. *Upperside.* Exactly like preceding species (*P. pharyge,* Hew.) in every detail. *Underside.* Dull fuscous brown. *Fore-wing:* two almost imperceptible light thin parallel lines traverse the lower portion of the wing, one hind-marginal and the other discal; these two lines are continued a little more distinctly in *hind-wing;* the hind-marginal line becomes a little whiter towards anal angle, and is outwardly edged with dark fuscous. The discal line remains parallel to hind-margin and joins the inner margin at end of abdomen. Below the 3rd and 2nd median nervules on this line are two dark brown spots; below 1st median nervule is a trace of another.

Female. *Upperside.* Uniform dark fuscous; cilia light. *Underside.* Dull ochreous fuscous: basal region very slightly darker and bordered by dark ochreous line from centre of costa to centre of inner margin in fore-wing and continued across centre of hind-wing. A thin light line darkened on each side, runs parallel to hind-margin in both wings some 5 mm. from discal line and 3 mm. from hind-margin, slightly curved inwards towards costa of fore-wing. In the hind-wing, the discal line is made prominent by two ochreous guttulate spots below 3rd and 2nd median nervules as in the male. The shape of the hind-margin distinguishes it from other species of *Poritia*, being sharp at apex, then curved in slightly to third median nervule which, together with the second and first median nervules, is slightly prolonged, thus giving an angulate appearance to the wing. A thin white line edges the hind-margin and the sub-marginal line is distorted to follow the vagaries of the hind-margin itself.

Exp. al. ♂ 30 mm. ♀ 38 mm.
Habitat: Mt. Matang (2,000 ft.) and Kuching, Sarawak.
Types, ♂ and ♀, in Sarawak Museum.

382. *Poritia solyma*, de Nicév.

Simiskina solyma, de Nicéville, Journ. Asiat. Soc. Beng. Vol. LXIII. pt. 2, p. 29, pl. IV. fig. 10 (1894).

Labuan (Waterstradt).

Genus, ZARONA, de Nicéville.

383. *Zarona jasoda*, de Nicéville, Journ. Asiat. Soc. Beng. Vol. LVII. pt. 2, p. 280, pl. 14, fig. 5, ♂ (1888).

A single male specimen from Sandakan captured by Mr. D. Cator, seems to be the only record for Borneo of this species.
Distribution: Burma and Tenasserim.

Sub. Fam. VI. ARHOPALINAE.

Genus, SURENDRA, Moore.

384. *Surendra amisena*, Hew.

Amblypodia palowna, Hewitson, Cat. Lycæn. B. M. p. 13, pl. VII. figs. 74-78, ♀ (1862).
Amblypodia amisena, Staudinger, Iris., Vol. II. p. 131, pl. II. fig. 3 (1889).

Borneo (Low); Mt. Kina Balu (Everett); Trusan, Baram, Santubong, Mt. Matang, Kuching, Quop and Pangkalan Ampat (Sar. Mus.).
Distribution: Malacca, Nias, Sumatra, Balabac and Palawan.
The Sarawak females show both forms figured by Bethune-Baker (*Trans. Zool. Soc. Lond.* Vol. XVII. pl. I. figs. 4 and 5).
Injury. ♂, shallow bite removing the anal half of hind-margin of the left fore-wing.

Genus, IRAOTA, Moore.

385. *Iraota rochana*, Horsfield.

Amblypodia rochana, Horsfield, Cat. Lep. Mus. E. I. C. p. 108, n. 40 (1829).
Thecla timoleon, Boisduval (*nec* Stoll), Sp. Gén. Vol. I. pl. XXII. fig. 4, ♀ (1836).
Iraota boswelliana, Distant, Rhop. Malay. p. 258, n. I. pl. XXII. fig. 23, ♀ (1885).

Mt. Kina Balu (Waterstradt); Labuan (Low and Mus. Staudinger); Busau, Kuching, Mt. Matang—3,200 ft. and Mt. Santubong—2,800 ft. (Sar. Mus.).

Distribution: Mergui, Philippines, Java, Sumatra, Billiton, Penang and Singapore.

Frequents the higher slopes (including the summits) of Mts. Matang and Santubong in Sarawak. Flies with great rapidity. Sarawak males show a certain amount of variation in the extent of the iridescent blue, which is much reduced in some examples. Bethune-Baker writes that the female has three distinct tails, while the male has but two. The three Sarawak females before me are exactly similar to the male in this respect, having *two* tails and one short tooth-like projection from the second median nervule.

Injuries. (i) ♂, small symmetrical bite removing the anal angle of both hind-wings. (ii) ♀, large quadrate symmetrical bite removing anal portion of both hind-wings.

386. *Iraota lazarena,* Feld.

Myrina lazarena, Felder, Wien. Ent. Monats. vi. p. 293, n. 61 (1862).

Borneo.

Distribution: Celebes and Philippine Islands.

387. *Iraota nila,* Distant.

Iraota nila, Distant, Rhop. Malay. p. 462, n. 2, pl. XLIV. fig. 24, ♀ (1886).

Mt. Kina Balu (Waterstradt); Mt. Santubong—2,800 ft., Mt. Matang—3,200 ft., Kuching and Satap (Sar. Mus.).

Distribution: Malacca, Perak and Sumatra.

Frequently taken on the summits of Mts. Santubong and Matang, and occasionally on the lower ground in those neighbourhoods. All the females in the Sarawak Museum have very narrow black hind-marginal borders on the upperside, differing thus from Distant's figure which shows quite a broad border. Druce noticed the same difference in comparing some females from Kina Balu.

Injury. ♀, one large jagged triangular bite, removing anal portion of left fore-wing and apical regions of both hind-wings; the piece removed from the right hind-wing is equal in area and shape to the sum of the two pieces removed from the left wings, thus indicating that the attack was made when the insect was at rest with wings imperfectly closed.

Genus, AMBLYPODIA, Horsfield.

388. *Amblypodia narada,* Horsfield.

Amblypodia narada, Horsfield, Cat. Lep. Mus. E. I. C. p. 98, pl. I. fig. 8 (1829).

Amblypodia taoona, Moore, Proc. Zool. Soc. Lond. p. 835 (1878).

Sarawak (coll. Godman and Salvin); Limbang River and Kuching (Sar. Mus.).

Distribution: Mergui, Andamans, Malay Peninsula and Archipelago.

This beautiful species is rare in Sarawak. I was lucky enough to catch a fine male recently feeding on animal *excreta* on a sunny spot among the stones of a small mid-river island in the upper waters of the Limbang River (Kuala Madalam).

389. *Amblypodia anita,* Hew.

Amblypodia anita, Hewitson, Cat. Lycaen. B. M. p. 14, pl. VIII. figs. 90, 91, ♂ (1862).

Amblypodia narada, var. *erichsonii,* Wood-Mason and de Nicéville, Journ. Asiat. Soc. Beng. Vol. XLIX. pt. 2, p. 234, n. 53 (1880).

Amblypodia naradoides, Moore, Proc. Zool. Soc. Lond. p. 141 (1879).

Amblypodia darana, Moore, *l. c.* p. 141.

Amblypodia arracana, Grose-Smith, Ann. Mag. Nat. Hist. ser. 5. Vol. XX. p. 268 (1887).

Trusan (Everett); Labuan (Low); Bidi (Sar. Mus.).

Distribution: India, Ceylon, Siam, Sumatra, Sulu Island.

Injury. ♀, large quadrate piece removed from hind-margin of left hind-wing.

Genus, ARHOPALA, Boisduval.

Bethune-Baker records 196 species of this genus, of which 59 are found in Borneo. Adding the five species described here as new, the total now therefore is 64 for this country.

390. *Arhopala meander,* Boisd.

Arhopala meander, Boisduval, Voy. 'Astrolabe,' Ent. p. 76 (1832).

Arhopala adherbal, Grose-Smith, Rhop. Exot. Vol. III. p. 10, pl. XXV. fig. 3 (1902).

Arhopala appianus, Grose-Smith, *t. c.* p. 11, pl. XXV. fig. 4.

South East Borneo.[1]

Distribution: Malay Archipelago to New Guinea, Queensland and New Zealand.

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[1] "One very magnificently marked (underside) specimen from the collection of Herr Ribbe from South-east Borneo" (G.T. Bethune-Baker, *Proc. Zool. Soc. Lond.* p. 658, 1896.

391. *Arhopala centaurus,* Fab.

Papilio centaurus, Fabricius, Syst. Ent. p. 520, n. 329 (1775).
Polyommatus helus, Godart, Enc. Méth. Vol. IX, p. 652, n. 119 (1823).
Amblypodia pseudo-centaurus, Doubleday, List Lep. B. M. Vol. II. p. 24 (1847).
Amblypodia nakula, Felder, Wien. Ent. Monatsch. Vol. IV. p. 395, n. 4 (1860).
Nilasera pirama, Moore, Lep. Ceyl. Vol. I. p. 116, pl. XLIII. figs. 3, a, b, c (1881).
Nilasera pirithous, Moore, Proc. Zool. Soc. Lond. p. 531 (1883).

Sandakan (Pryer); Labuan (Low); Limbang, Buntal, Mt. Matang, Kuching, Bau and Busau (Sar. Mus.).

Distribution: India and Malaya.

In some of the Sarawak females the light-blue edging to the cell-spots on the underside of the fore-wing is absent: but it is present in others and in all the males.

392. *Arhopala eridanus,* Feld.

Amblypodia eridanus, Felder, Sitz. Akad. Wiss. Wien. XL. p. 453 (1860).
Amblypodia polita, Röber, Iris, Vol. I. p. 199, pl. IX. fig. 14 (1887).

This species has been recorded from Palawan, Cagayan and Balabac Islands off the north coast of Borneo, so that its future capture on the mainland may yet be recorded. Although Cagayan is some 60 miles off the coast of Borneo, this latter is the nearest large island and so it seems permissable to stretch a point and allow the inclusion of *eridanus* in the "Bornean" Fauna; the neighbouring archipelagos of Palawan and Sulu are well over 100 miles away. Balabac lies between Palawan and the northern coast of Borneo.

393. *Arhopala lycaenaria,* Feld.

Amblypodia lycaenaria, Felder, Wien. Ent. Monatsch. Vol. IV. p. 396, n. 8 (1860).
Amblypodia olinda, Druce, Proc. Zool. Soc. Lond. p. 351, pl. XXXIII. fig. 5, ♀ (1873).
Amblypodia buxtoni, Distant, Rhop. Malay. p. 464, n. 20, pl. XLIV. fig. 18, ♀ (1886).

Sandakan (Pryer); Labuan (Low); Limbang, Santubong and Kuching (Sar. Mus.).

Distribution: Malay Peninsula to Sumatra and Billiton.

Common in Sarawak.

Injury. ♀, small bite from anal angle of right fore-wing.

394. *Arhopala myrtale,* Staud.

Amblypodia myrtale, Staudinger, Iris, Vol. II. p. 126, pl. I. fig. 17 *nec* 18 (1889).

Sandakan (Pryer); Labuan (Low); Santubong and Kuching (Sar. Mus.).

There are five males in the Sarawak Museum.

Also recorded from Palawan.

395. *Arhopala aida,* de Nicéville.

Arhopala aida, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. IV. p. 168, n. 7, pl. A. fig. 1, ♂ (1889).

Bethune-Baker records "two specimens from Labuan—a male like type, and a female small and violet coloured" (*Proc. Zool. Soc. Lond.* p. 666, 1896), but remarks in his monograph in *Trans. Zool. Soc.* seven years later that the female is unknown.

Also recorded from Burma.

396. *Arhopala labuana,* Bethune-Baker.

Arhopala labuana, Bethune-Baker, Proc. Zool. Soc. Lond. p. 667, pl. XXX. figs. 12 ♂, 13 ♀ (1896).

Labuan, Kuching (Sar. Mus.).

Also recorded from Mindanao.

397. *Arhopala arzenius,* Feld.

Arhopala arzenius, Felder, Reise Nov. Lep. Vol. II. p. 236, tab. XXIX. fig. 18 (1865).

A single example from Kuching, Sarawak, constitutes the first record of this species for Borneo.

Previously recorded from Luzon and Batchian only.

Mr. Druce kindly identified the specimen.

398. *Arhopala vihara,* Feld.

Amblypodia vihara, Felder, Wien. Ent. Monatsch. Vol. IV. p. 395, n. 5 (1860).

Labuan, Kuching (Sar. Mus.); Tameang-Lajang.

Distribution: Malacca, Nias, Sumatra.

There are two females in the Sarawak Museum; the undersides agree exactly with the male, but on the upperside the hind-marginal borders are much deeper, widening across the apex in fore-wing, but continuing evenly round the costa of hind-wing. The markings on the underside of both sexes vary very little, except for the small spot below the first median nervule, which is absent altogether in one example.

399. *Arhopala adorea,* de Nicév.

Arhopala adorea, de Nicéville, Butt. Ind. Vol. III. p. 238, n. 789, pl. frontispiece, fig. 139, ♂ (1890).

Kuching (Sarawak).

Distribution: India to Malay Peninsula and Sumatra.

Previously unrecorded from Borneo. The four examples (3 ♂, 1 ♀) in the Sarawak Museum are of the violet form.

400. *Arhopala sandakani,* Bethune-Baker.

Arhopala sandakani, Bethune-Baker, Proc. Zool. Soc. Lond. p. 671, pl. XXXI. fig. 2, ♂ (1896).

Sandakan and Silam.

Also recorded from Pulo Bai and Java.

401. *Arhopala drucei,* Bethune-Baker.

Arhopala drucei, Bethune-Baker, *t. c.* p. 661, pl. XXX. figs. 1 ♂, 2 ♀.

Mt. Kina Balu, Kuching and Quop (Sar. Mus.). Confined to Borneo.

Injury. ♂, a small piece removed from anal angle of each hind-wing, almost symmetrically.

402. *Arhopala incerta,* n. sp.

MALE. *Upperside.* Lustrous purple very narrowly margined with fuscous; very closely allied to *A. drucei* from which it differs on the upperside in being a brighter purple. *Underside.* The markings are slightly bolder than in *drucei* and the transverse band of the fore-wing is unbroken and wider than in that species. The 7th spot of this band in *incerta* is very small and isolated, in *drucei* it is large and attached to the 6th.

Exp. al. ♂ 49 mm.

Type. Male. Mt. Matang, Sarawak, March 1898 (Sar. Mus.).

Besides the Type there are two examples in the Sarawak Museum from Kuching.

It is possible that, when further specimens come to hand, intermediate forms will be found, so that *incerta* will have to be merged as a sub-species or variety of *drucei.* At present however it seems sufficiently different to merit specific distinction.

Injury. ♂, long bite from apex of right hind-wing just below the costa, and a similar but smaller piece removed from the apex of left fore-wing.

403. *Arhopala anunda,* Hew.

Amblypodia anunda, Hewitson, Ill. Diurn. Lep. Lyc. p. 14 *a,* n. 73, pl. III. a, fig. 32 (1865).

Narathura anthelus, Distant, Rhop. Malay. pl. XXIII. fig. 4, ♀, *et in parte* p. 263 (1886).

Amblypodia anthelus var. *saturatior,* Staudinger, Iris, Vol. II. p. 122 (1889).

Labuan (Low); Kuching (Sar. Mus.).

Distribution: Sumatra, Java and the Philippines.

Bethune-Baker records both forms (a brilliant morpho-blue and a violet-blue) from Borneo; the two (♂ and ♀) in the Sarawak Museum are violet-blue.

Injury. ♀, a very wide but shallow bite removing the hind-marginal edge of the right wings, leaving the apex of fore-wing and anal angle of hind-wing intact.

404. *Arhopala anarte,* Hew.[1].

Amblypodia anarte, Hewitson, Cat. Lyc. B. M. p. 5, n. 20, pl. III. figs. 16 and 17, ♂ (1862).

Bethune-Baker gives Borneo as one of the habitats of this species, and Druce (in 1873) mentions a female under this name; H. H. Druce however, having examined this specimen, writes in 1895 that this latter record is inaccurate, the specimen being *A. agnis,* Feld. nec *A. anarte,* Hew. As Bethune-Baker mentions Druce as an authority for this species, it is possible that he records it from Borneo on this ground; and that he did not verify H. H. Druce's correction; therefore I include it in the Bornean list with a certain amount of hesitation.

Distribution: Myitta, Burma, Malacca and Macassar.

405. *Arhopala achelous,* Hew.

Amblypodia achelous, Hewitson, Cat. Lyc. B. M. p. 7, n. 30, pl. V. figs. 7, 8, ♂ (1862).

Labuan (Low); Matang, Santubong and Kuching (Sar. Mus.).

Also recorded from Singapore.

Injury. ♂, a long jagged bite removing anal angle of left fore-wing and apical half of hind-margin of left hind-wing.

406. *Arhopala havilandi,* Bethune-Baker.

Arhopala havilandi, Bethune-Baker, Proc. Zool. Soc. Lond. p. 665, pl. XXX. figs. 8 ♂, 9 ♀ (1896).

Mt. Kina Balu only.

407. *Arhopala brookei,* Bethune-Baker.

Arhopala brookei, Bethune-Baker, Trans. Zool. Soc. Lond. Vol. XVII. p. 84, pl. I. fig. 29, ♂ (1903).

Pulo Laut.

Confined to Borneo.

Bethune-Baker (*l. c.*) remarks "one specimen from Pulo Laut in which the brown surface below is quite lustrous and the markings of the primaries are much more distinct."

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[1] Snellen records *A. anarte,* Hewitson, from Billiton. He gives *Narathura agnis,* Distant (*Rhop. Malay.* p. 273) as a synonym of this species.

408. *Arhopala aroa,* Hew.

Amblypodia aroa, Hewitson, Ill. Diurn. Lep. Lyc. p. 13, n. 60, pl. II. fig. 12, ♂ (1862).
Amblypodia pryeri, Butler, Proc. Zool. Soc. Lond. p. 121 (1892).

Sandakan (Pryer); Trusan and Sarawak (Everett); Kusin hills, near Banting, Santubong, Mt. Matang, Bau and Kuching (Sar. Mus.).

Distribution: Malaya—from Burma to New Guinea.

The Sarawak males show two shades of purple, one a lustreless brown-purple, the other a blue-purple approaching the brilliant colouring of *achelous,* Hew.

Injury. ♂, a bite out of anal angle of right fore-wing and another out of anal angle of hind-wing, just missing the tail.

409. *Arhopala elopura,* H. H. Druce.

Arhopala elopura, H. H. Druce, Ent. Mo. Mag. ser. 2. Vol. V. p. 9 (1894).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt).

Confined to Borneo.

Bethune-Baker remarks "this is evidently one of the commonest species of the genus in Borneo;" however the Sarawak collection has yet to meet with it.

410. *Arhopala pseudomuta,* Staud.

Amblypodia pseudomuta, Staudinger, Iris, Vol. II. p. 125 (1889).

Borneo.

Also recorded from Malacca and Sumatra.

Bethune-Baker makes a curiously contradictory statement in regard to this species and *A. rafflesii.* Of *rafflesii* he says, "This species is nearest *pseudomuta,* Staudinger, but can be recognised at once by its much brighter, lighter, and bluer colour ......" Of *pseudomuta* he says, "This species may be recognised from *rafflesii,* de Nicéville, by its larger size and bluer colour." His description and figure give a dull violet for *pseudomuta.*

411. *Arhopala atosia,* Hewitson.

Amblypodia atosia, Hewitson, Ill. Diurn. Lep., Lyc. p. 9, n. 37, pl. II. figs. 8 and 9, ♀ (1863).
Amblypodia aricia, Staudinger, Iris, Vol. II. p. 124, Taf. I. fig. 15 (1889).

Kuching, Mt. Matang, Tambak and Pulo Laut (Sar. Mus.)

Distribution: Malaya.

Four females present slight variation in the upperside marginal border of the hind-wing; in one the broad costal margin continues very nearly as broad along the hind-margin; in two others it is less; and in a third the broad costal margin remains, but the hind-marginal border is reduced to a mere line. The undersides are constant.

412. *Arhopala epimuta,* Moore (*nec* Hew.).

Amblypodia epimuta, Moore, Cat. Lep. E. I. C. p. 42 (1857).

Arhopala antimuta, de Nicéville, Butt. Ind. Vol. III. p. 277 (1890).

Arhopala atosia? H. H. Druce, Proc. Zool. Soc. Lond. p. 589 (1895).

Borneo (Low); Sandakan (Pryer); Labuan (Low); Santubong, Kuching, Serambu, Bau, Paku (Sar. Mus.).

Distribution: Mergui, Tenasserim and Malay Peninsula.

Very common in Sarawak. The females present the same variation noticed in female *atosia.*

Bethune-Baker says this species is so like *atosia* that practically the only difference is the absence of tails in *epimuta* and the presence of them in *atosia.* Druce records under "*atosia?,*" some Bornean specimens which agree exactly with Hewitson's description except that they are tailless, so I conclude they were really *epimuta.*

413. *Arhopala moolaiana,* Moore.

Narathura moolaiana, Moore, Proc. Zool. Soc. Lond. p. 835 (1878).

Amblypodia epimuta, Hewitson (*nec* Moore), Cat. Lyc. B. M. p. 11, n. 51, pl. VI. figs. 59 and 60, ♀ (1862).

Arhopala pastorella, Doherty, Journ. As. Soc. Beng. Vol. LVIII. pt. 2, p. 418, pl. XXIII. fig. 12 (1889).

Arhopala agelastus, de Nicéville, Butt. Ind. Vol. III. p. 278 (1890).

Kuching, Sarawak (Sar. Mus.). The first record from Borneo.

Distribution: India, Burma and Malay Peninsula.

414. *Arhopala amphimuta,* Feld.

Amblypodia amphimuta, Felder, Wien. ent. Monatsch. iv. p. 396 (1860).

Sandakan (Pryer).

Also recorded from Malacca.

415. *Arhopala asia,* de Nicév.

Arhopala asia, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. VII. p. 333, n. 9, pl. H. fig. 16, ♂ (1892).

Labuan (Waterstradt); Trusan, Quop, Kuching (Sar. Mus.).

Distribution: Malay Peninsula and Sumatra.

Bethune-Baker notices that Bornean specimens are somewhat bluer and darker than the type.

416. *Arhopala agesilaus,* Staud.

Amblypodia agesilaus, Staudinger, Iris, Vol. II. p. 127, Taf. I. fig. 16 (*nec* 17) (1889).

Kuching and Quop (Sar. Mus.).

Distribution: Malaya—Malay Peninsula, Nias Island, Sumatra, Palawan and Mindanao.

Two Sarawak examples have the costal spot of the hindwings very much reduced, suggesting a transition to the next species (*A. catori*) which is characterized by the complete absence of this costal spot.

But for the differences in genitalia recorded by Bethune-Baker I should be inclined to regard *catori* as a variety only of *agesilaus.*

417. *Arhopala catori,* Bethune-Baker.

Arhopala catori, Bethune-Baker, Trans. Zool. Soc. Lond. Vol. XVII. p. 93, pl. II. fig. 11, ♂; pl. V. figs. 8 and 8 a (1903).

Borneo and Bilit (Bethune-Baker); Mt. Marapok, British North Borneo and Kuching (Sar. Mus.).

Also recorded from Palawan.

418. *Arhopala similis,* H. H. Druce.[1]

Arhopala similis, H. H. Druce, Proc. Zool. Soc. Lond. p. 592 (1895).

Arhopala anila, de Nicéville, Journ. Asiat. Soc. Beng. Vol. LXIV. pt. 2, p. 469 (1895). ....

Sandakan (Pryer); Kuching and Mt. Penrissen (Sar. Mus.).

Distribution: Selangor and Sumatra.

Only three examples in the Sarawak Museum—two taken in August 1896 and the third in May 1899.

419. *Arhopala agesias,* Hew.

Amblypodia agesias, Hewitson, Cat. Lyc. B. M. p. 2, n. 49, pl. VI. figs. 55 and 56 (1862).

Sandakan (Pryer); Mt. Kina Balu; Kuching (Sar. Mus.); Pulo Laut.[2]

Distribution: Malacca and Sumatra.

419a. *Arhopala agesias ovomaculata,* Hew.

Amblypodia ovomaculata, Hewitson, Ill. Diurn. Lep. Suppl. p. 22, no. 103, pl. suppl. VIII. figs. 66 and 67 (1878).

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[1] "This is the variety a of *A.agesiase,*(Hew.)"—Shelford *Journ Str. Br. Roy. As. Soc* No. 35. p. 34. 1901.

[2] Bethune-Baker gives Pulo Laut as a habitat for this species, but he describes this locality as "a small island off New Guinea" probably a mistake for the well known island of Pulo Laut off the South-East coast of Borneo.

Arhopala agesias var. *kinabala,* H. H. Druce, Proc. Zool. Soc. Lond. p. 592 (1895).

Mt. Kina Balu (Waterstradt); Labuan (Low); Mt. Kinabatangan, ulu Lawas, Mt. Matang (Sar. Mus.).
Apparently a mountain form of *agesias.*
Recorded from Battak Mountains, Sumatra.

420. *Arhopala avatha,* de Nicév.

Arrhopala avatha, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. X. p. 174, n. 23, pl. T. fig. 34, ♂ (1896).

Sarawak. A single example determined by Mr. Bethune-Baker. Mr. Druce notes that it has slightly narrower borders.
Previously recorded from Sumatra only.

421. *Arhopala moorei,* Bethune-Baker.

Arhopala moorei, Bethune-Baker, Proc. Zool. Soc. Lond. p. 669, pl. XXXI. fig. 1, ♂ (1896).

Mt. Kina Balu; Labuan; Santubong, Kuching and Quop Mus.).
Distribution: Malacca and Sumatra.
A common species in Sarawak.

422. *Arhopala waterstradti,* Bethune-Baker.

Arhopala waterstradti, Bethune-Baker, *t. c.* p. 668, pl. XXX. figs. 10 and 11, ♂ and ♀.

Mt. Kina Balu (Mus. Staudinger); Lawas and Mt. Matang —3,200 ft. (Sar. Mus.).
Confined to Borneo.

423. *Arhopala deva,* Bethune-Baker.

Arhopala deva, Bethune-Baker, *t. c.* p. 669, pl. XXXI. fig. 3.

N. Borneo (Cator); Kuching (Sar. Mus.).
Confined to Borneo.
Bethune-Baker is inclined to think that this species replaces *antimuta,* Felder, in North Borneo. In Sarawak both species occur, but *antimuta* more rarely.

424. *Arhopala antimuta,* Felder.

Arhopala antimuta, Felder, Reise Novara, Lep. Vol. II. p. 233, n. 26 (1865).
Arhopala davisonii, de Nicéville, Butt. Ind. Vol. III. p. 280, frontispiece, fig. 135, ♂ (1890).

Sandakan (Pryer); Labuan (Low); Kuching (Sar. Mus.).
Distribution: Malaya.

425. *Arhopala hypomuta,* Hew.

Amblypodia hypomuta, Hewitson, Cat. Lyc. B. M. p. 11, pl. VI. figs. 63 and 64, ♂ (1862).

Kuching (Sar. Mus.).

Distribution: India and Malay Peninsula.

Very common in Sarawak in the neighbourhood of Kuching.

426. *Arhopala metamuta,* Hew.

Amblypodia metamuta, Hweitson, Ill. Diurn. Lep. Lyc. p. 13, n. 59, pl. II. figs. 14 and 15, ♂ (1863).

Simanggang and Kuching (Sar. Mus.).

Distribution: Malaya—Mergui and Tenasserim to Sumatra and Billiton.

Previously unrecorded from Borneo. Three of the four examples in the Sarawak Museum (taken 1894 and 1896) differ from Distant's figure in *Rhopalocera Malayana* (Pl. XXIII. fig. 19) in having a dislocated transverse band on the underside of fore-wing; but the fourth example, taken near Kuching in August 1911, is normal in this respect.

Injury. ♂, large triangular bite out of hind-margin of right hind-wing, reaching as far as the cell and removing rather more than half the wing.

427. *Arhopala alaconia,* Hew.

Amblypodia alaconia, Hewitson, *op. cit.* p. 14, pl. III. figs. 52 and 53 (1869).

Labuan (Low).

Confined to Borneo.

428. *Arhopala sarawaca,* n. sp.

MALE. *Upperside.* Lustrous blue-purple with narrow even fuscous hind-marginal borders, a little broader at apex of fore-wing, more so across apex of hind-wing; costal margin of fore-wing very narrowly fuscous, of hind-wing more than twice as broad; inner-marginal fold of hind-wing grey fuscous, a thin indistinct white line bordering the anal angle; dark fuscous tail white-tipped. *Underside.* Brown with an iridescent lilac tinge, particularly noticeable in the hind-wing. The white edging to the spots well pronounced; general appearance of the underside like *A. ariel,* Doherty, but the individual markings quite different. *Fore-wing:* three cell spots well defined and in increasing sizes; below the 2nd and 3rd are two irregular half-formed spots; above the second and slightly interior another small spot; small minute white spots above the third cell spot suggesting an irregular continuation of that spot to the costa; a well-defined transverse band of 6 spots: the 1st very small, 2nd, 3rd and 4th fused and sloping outwards, the 5th and 6th shifted well in and sloping outwards; hind-marginal border composed of a row of lunular spots succeeded exteriorly by an anteciliary white line; inner marginal region pale brown-fuscous. *Hind-wing:* a large costal-basal spot; four large basal spots, the third and fourth shifted outwards, the first three connected; a discal row of three large conterminous spots, the costal spot being fused with the first of a post-discal transverse row; a large spot closing cell and almost touching the 3rd and 4th spots of the post-discal row; a small half-formed spot immediately below it; the first four spots of the transverse row are placed *en échelon* outwards, the fifth shifted well in, the sixth out, the seventh or anal spot, long and irregular, reaching inner margin. Hind-marginal row of spots as in fore-wing but rather larger and the three anal spots are touched inwardly with blue iridescent scales; white anteciliary line as in fore-wing. Cilia grey-fuscous.

FEMALE. *Upperside.* Violet-purple, with dark narrow margin to costa of fore-wing broadening across apex and continuing broadly along hind-margin to inner margin; in hind-wing the base and discal region violet-purple surrounded by broad fuscous borders. A short tail, brown-fuscous, white-tipped. Underside colour and markings as in male, except for the addition of a seventh spot, small and indistinct, in the post-discal transverse band of the fore-wing.

Exp. al. ♂ 33 mm., ♀ 28 mm.

Types. Male: near Kuching, Sarawak, June 1911. *Female:* Sarawak, 1910 (Sar. Mus.) examined by Messrs. Druce and Bethune-Baker, who report the species as unknown to them.

In addition to the Types there are two females in the Sarawak Museum, captured near Kuching in 1900 and 1910, and a male from the ulu Madihit (head waters of the Limbang River), Sarawak, May 1911.

429. *Arhopala eumolphus,* Cr.

Papilio eumolphus, Cramer, Pap. Exot. Vol. IV. p. 19, pl. CCXCIX. figs. G, H, ♂ (1780).

Amblypodia bupola, Hewitson, Ill. Diurn. Lep. Suppl. p. 21, n. 102, pl. (suppl.) VII. figs. 64 and 65, ♀ (1878).

Narathura farquhari, Distant, Rhop. Malay. p. 264, n. 5, pl. XXIII. fig. 3, ♂ (1885).

Arhopala hellenore, Doherty, Journ. Asiat. Soc. Beng. Vol. LVIII. pt. 2, p. 422, n. 18, pl. XXIII. fig. 7, ♂ (1889).

Narathura maxwelli, Distant, Rhop. Malay. p. 263, n. 4, pl. XXIII. fig. 10, ♀ (1885).

Mt. Kina Balu (Waterstradt); Limbang and Kuching (Sar. Mus.); S. E. Borneo.

Distribution: India and Malaya to Philippines and New Guinea.

The males in the Sarawak Museum present a good deal of variation in the underside markings; the spots in the majority are rather larger than in the specimens figured by Bethune-Baker.[1] In one example the spots are so large that the transverse band of the fore-wing is partly fused with the third cell-spot and the spot beneath, suggestive of *staudingeri*, Semper. The hind-wing however does not show the same fusion of spots. Bethune-Baker's figures of the male *eumolphus* do not show the costal-basal spot which is present in the hind-wing of all the Sarawak males.

The males are fairly common in the neighbourhood of Kuching. Four females have been examined by Mr. Druce, who suggests that they represent the *farquhari* form of this species.

Injuries. (i) ♂, a ragged bite cutting out tail portion of right hind-wing. (ii) ♂, a square piece from apex of left fore-wing removed. (iii) ♂, a large tearing bite removing the whole of the anal angle of right hind-wing, but leaving a central strip in a similarly outlined gap in the left hind-wing. (iv) ♀, a small quadrate piece removed from hind-margin of right fore-wing.

430. *Arhopala aurea,* Hew.

Amblypodia aurea, Hewitson, Cat. Lyc. B. M. p. 8, pl. VIII. figs. 87 and 88 (1862).

Labuan (Low); Sarawak (Hewitson); Tameang-Lajang. Also recorded from Sapagaya.

A rare species, of which the female is unknown at present.

431. *Arhopala borneensis,* Bethune-Baker.

Arhopala borneensis, Bethune-Baker, Proc. Zool. Soc. Lond. p. 666, pl. XXX. fig. 5, ♂ (1896).

Mt. Kina Balu, Mt. Santubong—2,600 ft. (Sar. Mus.); Tameang-Lajang.

Also recorded from Malacca.

A rare species, of which the female is unknown at present.

432. *Arhopala tembaga,* n. sp.

MALE. *Upperside.* Brass-green, with hind-marginal borders of black, very narrow in the fore-wing, very heavy in the hind-wing. *Fore-wing:* the costa edged with black, narrow hind-marginal border tapering from anal angle to apex. *Hind-wing:* base and discal region brass-green, extending just above the sub-costal nervure and below the median, thus leaving dark broad costal and inner margins, and a broad hind-margin covering the outer two-fifths of the wing. Short black tail white-tipped. Long dark fuscous hairs along the inner margin.

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[1] Bethune-Baker (*l.c.*) describes *a male* under the *female* sign ;doubtless a printer's error.

Underside. Dark grey fuscous. *Fore-wing:* first discal spot indistinct, 2nd elongate right across cell, third large. The transverse band unbroken but angled at the 4th spot as in *basiviridis,* de Nicév., the 5th spot being shifted well in, the 6th slightly out again and the 7th immediately beneath almost obsolete and enclosed in a light grey patch which reaches from the outer half of inner margin to 1st median nervule. A distinct sub-marginal row of spots the upper three of which are slightly shifted inwards. *Hind-wing:* indistinct costal-basal spot, regular basal row composed of four well-formed spots; median row of three spots, the two first well-defined, the third large and irregular; a transverse band of two confluent spots below the costa, followed by one elongate and slightly shifted in closing to the end of cell, this last succeeded outwardly by a smaller elongate spot, which is the first of an irregular series of confluent spots continuing the band to the inner margin; a rough sub-marginal row ending at anal angle in bright blue iridescent scales outwardly touched with black. Cilia fuscous.

FEMALE. *Upperside.* Purple, heavily margined with dark fuscous. *Fore-wing:* the dark costal margin extends along the sub-costal nervure, partially closes the cell and stretching across the radials and 3rd median nervule, leaves a broad fuscous apical region and an even margin 4-5 mm. wide from 2nd median nervule to inner margin. *Hind-wing:* margined as in male except that the purple disc (brass-green in male) extends rather more towards the hind-margin; tail twice as long as in male. *Underside.* Bronze-fuscous. Markings as in male, except that the discal spots of the fore-wing are rather heavier.

Exp. al. ♂ 41 mm., ♀ 47 mm.

Types, ♂ and ♀. Kuching (Sar. Mus.).

Messrs. Druce and Bethune-Baker who kindly examined this species for me, reported it as unknown to them. The underside is like that of *basiviridis,* but the totally different upperside of the male at once distinguishes it from that species.

433. *Arhopala basiviridis,* de Nicév.

Arhopala basiviridis, de Nicéville, Journ. Bomb. Nat. Hist. Soc. p. 373, pl. G, fig. 22, ♂ (1891).

Arhopala horsfieldi, H. H. Druce, Proc. Zool. Soc. Lond. p. 591 (1895).

Borneo (Doherty); Santubong and Kuching (Sar. Mus.).

Distribution: Burma, Malacca, Sumatra and Java.

All the Sarawak males before me have the costal basal spot in the hind-wing, which is not shown in Bethune-Baker's figure of the species. One specimen has the 5th spot of the fore-wing transverse band less shifted in than in the typical form, so that the spots form an arched, but continuous, band;

the other wing of the *same* specimen shows this even better, thus indicating that too much reliance should not be placed on so variable a character as this transverse band.

Injury. ♂, large piece removed from hind-margin of right hind-wing, just missing the tail.

434. *Arhopala abseus,* Hew.

Amblypodia abseus, Hewitson, Cat. Lyc. B. M. p. 9, n. 40 (1862).

Arhopala amphea, Felder, Reise Novara, Lep. p. 234. tab. XXIX. fig. 19 (1865).

Labuan (Low); Kuching (Sar. Mus.).

Distribution: India to Malaya; Philippines.

A common species in the neighbourhood of Kuching, Sarawak.

Bethune-Baker notices that Bornean males are "quite glossy purple" (*l. c.*).

435. *Arhopala diardi,* Hew.

Amblypodia diardi, Hewitson, Cat. Lyc. B. M. p. 9, n. 43, (1862).

Amblypodia capeta, Hewitson, Ill. Diurn. Lep. Suppl. p. 22, pl. VIII. figs. 70 and 71 (1878).

Amblypodia viardi, Staudinger, Iris, Vol. II. p. 130 (1889).

Labuan (Mus. Staudinger); Mt. Matang—3,200 ft., and Mt. Santubong—2,600 ft. (Sar. Mus.); S. E. Borneo (Ribbe).

Distribution: India, Assam, Malacca, Sumatra, Java and Philippines.

A good series in the Sarawak Museum shows a certain amount of variation in the two transverse bands of the fore-wing; in some they are of equal width, in others the outer is narrower; in some there is hardly any ground-colour left between, while in others a strip of ground-colour remains about equal in width to one of the transverse bands.

436. *Arhopala fulgida,* Hew.

Amblypodia fulgida, Hewitson, Ill. Diurn. Lep. Lyc. p. 11, n. 49, pl. V. fig. 31, ♀ (1863).

Panchala singapura, Distant, Rhop. Malay. p. 273, fig. 84 (1885).

A single female captured on Mt. Matang at an altitude of 2000 ft. constitutes the first record of this species for Borneo (Sar. Mus.).

Distribution: North India and Philippines to Malay Peninsula, Billiton and Sumatra.

The underside of the Sarawak example differs from Distant's figure in having but two fulgent spots at the anal angle instead of four (the two central ones are absent); in this feature it agrees with the Sarawak examples of *diardi*, but the characteristic unbroken sub-basal band identifies it at once as *fulgida*.

437. *Arhopala anniella*, Hew.

Amblypodia anniella, Hewitson, Cat. Lyc. B. M. p. 10, pl. VIII. figs. 83 and 84, ♂ (1862).

Mt. Kina Balu (Waterstradt); Labuan (Low); Kuching (Sar. Mus.).

Distribution: Malaya—Tenasserim to Sumatra, Java and Philippines.

The female is fairly common in Sarawak, but the male is more rare, or perhaps harder to catch.

438. *Arhopala apidanus*, Cramer.

Papilio apidanus, Cramer, Pap. Exot. Vol. II. pl. CXXXVII. figs. F. and G, ♂ (1777).
Papilio dorimond, Stoll, Suppl. Cramer, pl. XXXVII. figs. 4, 4a, ♀ (1790).
Flos ahamus, Doherty, Journ. Asiat. Soc. Beng. Vol. LX. pt. 2, p. 33, pl. I. fig. 6, ♀ (1891).

Lawas (Everett); Labuan (Low); Bintulu and Kuching (Sar. Mus.).

Distribution: Malaya.

The series in the Sarawak Museum is particularly uniform although the specimens were taken in different localities and in different months; all the females are pale purple.

Snellen describes var. *saturata* from Billiton (*Tijds. v. Ent.* XXXIII. p. 301).

439. *Arhopala morphina*, Dist.

Panchala morphina, Distant, Ann. Mag. Nat. Hist. ser. 5. Vol. XIV. p. 201 (1884).

Silam, British North Borneo (Cator); Labuan (Staudinger); near Kuching (Sar. Mus.).

Distribution: Malacca and Sumatra.

A local species in Sarawak; eight examples in the Sarawak Museum, of which the two males were captured June 1910 and April 1911, while the six females were taken in December 1909, January (3), February and March 1911. They are uniform in markings and colour; the wonderful rich hue of the male upperside colouring makes this species one of the most beautiful Arhopalas to be found in Borneo,—Bethune-Baker thinks "about the most magnificent of the genus," but his figure of the male gives no idea of "the intense richness of the deep ultramarine blue" (*l. c.*). He remarks on the rarity of the species.

Injury.[1] ♀. large asymmetrical bite removing anal portion of both hind-wings.

[In comparison with the more or less uniform injuries noticed among the *Theclinae* it is interesting to reflect on the diverse nature of the injuries seen in the *Arhopalinae,* in which species all parts of the wings have been attacked both in flight and at rest; this no doubt is due to the absence of any very prominent markings directing attention to a non-vital part. The majority of the injuries are in one side only, suggesting that they are principally attacked when in flight, thus showing that their protectively coloured undersides have a real value and stand them in good stead.[2]]

440. *Arhopala bazalus,* Hew.

Amblypodia bazalus, Hewitson, Cat. Lyc. B. M. p. 8, n. 38, pl. IV. figs. 37 and 38, ♀ (1862).
Satadra testa, de Nicéville, Journ. Asiat. Soc. Beng. Vol. LV. pt. 2, p. 253, n. 6, pl. XI. fig. 3, ♂ (1886).

S. E. Borneo (Bethune-Baker).
Distribution: Indo-Malaya and Japan.

441. *Arhopala bella,* Bethune-Baker.

Arhopala bella, Bethune-Baker, Proc. Zool. Soc. Lond. p. 664, pl. XXX. figs. 6 and 7 (1896).

Mt. Kina Balu only.

442. *Arhopala azinis,* de Nicév.

Arhopala azinis, de Nicéville, Journ. Bomb. Nat. Hist. Soc. p. 3, pl. T. fig. 31 (1895).
Arhopala kounga, Bethune-Baker, Proc. Zool. Soc. Lond. p. 662, pl. XXX. fig. 4, ♀ (*nec* fig. 3, ♂) (1896).

Mt. Kina Balu (Bethune-Baker).
Also recorded from N. E. Sumatra.

443. *Arhopala oenotria,* Hew.

Amblypodia oenotria, Hewitson, Ill. Diurn. Lep. Lyc. p. 14 a, pl. III c, fig. 56 (1865).

Kuching and Bau (Sar. Mus.).
Also recorded from Nias Island and Philippine Islands.

444. *Arhopala agnis,* Feld.

Arhopala agnis, Felder, Reise Novara, Lep. Vol. II. p. 228 (1865).

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[1] See Distant, *Rhop. Malay,* p. 273, fig. 85, 6, "showing mutilation effected by the attack of a bird" (*A. apidanus.*)

[2] "...and as they (Arhopalas) always settle with folded wings, of which the undersides present only dull brown, grey, or dull purple colour, little is seen of them." (de Nicéville and Martin in *Journ. As. Soc. Bengal* Vol. LXIV. pt. ii. p. 470, quoted by Bethune-Baker in *Trans. Zool. Soc. Lond.* 1903. p. 27.)

Amblypodia anarte, Hewitson, Ill. Diurn. Lep. Lyc. p. 4, n. 8, pl. I. figs. 6, 7, ♀ (1863).

Labuan (Low); Quop and Lundu (Sar. Mus.).

Distribution: Malaya—from Upper Tenasserim to Sumatra and Mindanao.

445. *Arhopala tameanga,* Bethune-Baker.

Arhopala tameanga, Bethune-Baker, Proc. Zool. Soc. Lond. p. 658, pl. XXIX. figs. 7 and 8 (1896).

Tameang-Lajang (S. E. Borneo).

446. *Arhopala semperi,* Bethune-Baker.

Arhopala semperi, Bethune-Baker, *t. c.* p. 659, pl. XXIX. figs. 9 and 10.

Mt. Kina Balu; Baram River; Tameang-Lajang.

Confined to Borneo.

447. *Arhopala barami,* Bethune-Baker.

Arhopala barami, Bethune-Baker, Trans. Zool. Soc. Lond. Vol. XVII. p. 126, pl. III. fig. 5 (1903).

Borneo.

Also recorded from Perak.

448. *Arhopala dajagaka,* Bethune-Baker.

Arhopala dajagaka, Bethune-Baker, Proc. Zool. Soc. Lond. p. 660, pl. XXIX. figs. 11 and 12 (1896).

Mt. Kina Balu; Labuan; Quap (Sar. Mus.); Tameang-Lajang.

Confined to Borneo.

The single Sarawak example (a male) measures 42 mm. across; Bethune-Baker gives the dimensions of male and female as 55-56 mm.

449. *Arhopala allata,* Staud.

Amblypodia allata, Staudinger, Iris, Vol. II. p. 125, Taf. II. fig. 1 (1889).

Labuan (Low).

Distribution: Palawan, Mindanao and Mindoro.

450. *Arhopala myrzala,* Hew.

Amblypodia myrzala, Hewitson, Ill. Diurn. Lep. Lyc. p. 140, pl. III b, figs. 41 and 42, ♂ (1865).

Kuching (Sar. Mus.). The first record of this species for Borneo.

Distribution: Mindanao, Philippine Islands.

Three examples in the Sarawak Museum, viz. two males taken in April 1896 and April 1911, and a female in July 1894.

451. *Arhopala shelfordi,* n. sp.

FEMALE. *Upperside.* Discal patch of bright violet-blue bordered very broadly with brown-fuscous. *Fore-wing:* costa well-arched; fuscous margin broad along the costa to first sub-costal nervule, thence diagonally across the wing, closing cell and leaving the apical half broad fuscous and hind-marginal border of same. *Hind-wing:* small violet patch covering the cell and very slightly extending above and beyond it; a dark line across the end of cell; rest of the wing dark brown-fuscous. No tails. *Underside.* Rich red-brown, clear spotted. *Fore-wing:* three regular increasing cell-spots, a small indistinct spot above and below the third cell-spot; a continuous transverse band slightly sinuous, composed of 6 spots; the 1st small and indistinct, forming with the next two a slight outward and convex curve, the 4th shifted outward, the 5th and 6th slightly out again. A faint hind-marginal row of lightly-edged spots; anal inner-marginal region extending to first median nervule, light brown. *Hind-wing:* a small and indistinct costal-basal spot; a sub-basal row of 4 well-defined spots, the third of which is shifted outwards; a median row of three larger spots; a long spot closing cell with small spot in the nervular angles immediately above and below; the transverse band composed of 7 well-defined spots; the 1st isolated, the next 5 continuous, of which the 2nd is large, the 3rd and 4th immediately below it and fused, the 5th and 6th fused and slightly shifted in, the 7th, or angular spot, long and stretching across to the inner margin. A continuous hind-marginal row of spots as in fore-wing; three dark spots at anal angle relieved inwardly with light iridescent blue, the outward spot separated from the other two. Cilia brown fuscous.

Exp. al. ♀ 40 mm.

Type. Female, near Kuching, Sarawak, January 17th 1910 (Sar. Mus.).

Three other examples from the same locality in the Sarawak Museum, and two (e coll. Sar. Mus.) in Mr. Druce's collection.

Examined by Messrs. Bethune-Baker and Druce, who pronounced the species as unknown to them.

452. *Arhopala rajah,* n. sp.

MALE. *Upperside.* Lustrous violet-purple broadly margined with glossy brown-fuscous. Rather narrow sub-acute fore-wings as in *A. buddha,* Bethune-Baker. *Fore-wing:* the discal region of lustrous purple is sharply defined by the fuscous border, which follows the sub-costal nervure, closes the cell and stretches across diagonally and rather irregularly, to form an even hind-marginal border 3 millim. in width and slightly diffuse along inner margin. A dark spot is noticeable at the end of cell. *Hind-wing:* long, bright purple discal patch, sharply defined as in fore-wing but more restricted in area, extending from base through cell and beyond it, including the basal third of the 2nd and 3rd median nervules and bounded by the 1st median nervule. Rest of the hind-wing brown fuscous. A short stout tail at the end of 1st median nervule; hind-margin just above this tail suggestive of being scolloped.

Underside. Brown, glossed with a beautiful lilac sheen, particularly so in the hind-wing, with clear, large, decisive markings. *Fore-wing:* three increasing spots in cell; a large spot, outwardly light-edged, below junction of 1st median nervule; a second, similar but smaller, below junction of 2nd median nervule. A broad continuous band of six large fused spots, the first four sloping outwards slightly and increasing in size, the 5th shifted in, the 6th out; there are indistinct traces of 7th and 8th spots. A well-defined hind-marginal line of spots followed by a thin light anteciliary line; inner marginal region to 1st median nervule light fuscous-brown. *Hind-wing:* small costal-basal spot; sub-basal row of four spots, the 2nd and 3rd of which are contiguous; a median row of three larger spots; a long spot closing cell; a spot in angle just above the junction of 1st median nervule and touching the 3rd sub-basal spot. Much interrupted transverse row of 7 large spots; the 1st and 2nd large and fused, 3rd and 4th fused and shifted well out so that the inner corner of the 3rd only just touches the outer lower corner of the 2nd, and 5th smaller and shifted well in, the 6th shifted out, and the 7th, or angular spot, shifted in and prolonged to the inner margin. A hind-marginal row of continuous spots outwardly edged with lightish lunules; a thin light anteciliary line; at anal angle:— a large black spot, inwardly edged with light iridescent blue, between 1st and 2nd median nervules, succeeded inwardly by two fused spots at the angle, the first of which is light iridescent blue edged with black, the second black inwardly edged with iridescent blue. Tail dark fuscous white tipped; cilia dark fuscous, except for a few white scales at anal angle of hind-wing.

Exp. al. ♂ 37 mm.

Type ♂ (and only known specimen), Mt. Lingga, Sarawak, May 1909 (Sar. Mus.).

Messrs. Bethune-Baker and Druce, who kindly examined it, reported it as unknown to them, but allied to *A. buddha,* a Javan species. The shape of *A. rajah* is like this species, but the pale azure-blue of *buddha* together with the narrower margins at once provide sufficient distinctions between the two species. The underside markings are also different.

453. *Arhopala caeca,* Hew.

Amblypodia caeca, Hewitson, Ill. Diurn. Lep. Lyc. p. 14, pl. IV. fig. 28 (1865).

Sarawak (Hewitson).

Confined to Borneo.

Sub. Fam. VII. THECLINAE.

The Bornean *Theclinae* seem to fall naturally into five groups which may be characterized as follows:—

1.	Hind-wing with one short filamentous tail.	1. *Chrysophanaria.*
2.	Hind-wing with two short filamentous tails, (the Indian genus, *Zesius,* belongs here, although the female is aberrant in having three tails).	2. *Bicaudataria.*
3.	Hind-wing both sexes with two tails, one of which is half an inch in length or over.	3. *Cheritraria.*
4.	Hind-wing both sexes with three tails.	4. *Horagaria.*
5.	Hind-wing with one tail of variable length; lobate at anal angle.	5. *Loxuraria.*

This classification is practically the same as that proposed by de Nicéville in his *Butterflies of India.* He divided the *Lycaenidae* into eleven groups of which the group *Thecla* is the sixth. This, he sub-divided into two sub-groups, the first containing six genera "which, as a rule, possess one short tail to the hind-wing from the termination of the first median nervule;" this sub-group I have called *Chrysophanaria,* since it contains the well-known genus, *Chrysophanus,* Hübner. The only Bornean representative of this sub-group (promoted to the rank of group here) is *Ilerda kiana,* Gr.-Smith. De Nicéville's second sub-group contained twelve genera "which all possess two short tails (under half an inch in length) to the hind-wing in both sexes, though one aberrant genus, *Zesius,* Hübner, from India has three tails in the female;" this sub-group (or group here) I call *Bicaudataria.*

The remaining three groups are almost the same as those of de Nicéville, except that I have merged his *Deudorix* group into the *Loxuraria* group.

Group 1. *CHRYSOPHANARIA.*

Genus, Ilerda, Doubleday.

454. *Ilerda kiana,* Grose-Smith.

Sithon kiana, Grose-Smith, Ann. Mag. Nat. Hist. ser. 6. Vol. III. p. 317 (1889).

Mt. Kina Balu (Everett, Hanitsch, Whitehead and Waterstradt); Mt. Marapok (Sar. Mus.—e coll. Druce).

Mr. Druce having carefully examined the neuration and antennae, finds it referable to the genus *Ilerda.* He remarks that "it has been received in some numbers from Kina Balu."

Group 2. *BICAUDATARIA.*

Genus, Dacalana, Moore.

455. *Dacalana vidura,* Horsf.

Amblypodia vidura, Horsf., Cat. Lep. E.I.C. p. 113 (1829).

Sandakan (Pryer); Labuan (Low); Trusan (Everett); Lawas, Trusan, Tambak, Santubong, Matang, Kuching, Bau, Lundu (Sar. Mus.); Banjarmasin (Wahnes).

Distribution: India (?) and Malaya.

This genus is distinguished from *Arrhenothrix*, de Nicév. by the presence of an additional sub-costal nervule in the fore-wing.

A long series from Sarawak bears out Druce's note that in Bornean examples the white band of the hind-wing varies in width; and many of them are indistinguishable from *A. pencilligera* in this respect.

Injury. ♂, small symmetrical bite removing the inner anal spot and tail in both hind-wings.

Genus, ARRHENOTHRIX, de Nicév.

456. *Arrhenothrix lowii*, H. H. Druce.

Arrhenothrix lowii, H. H. Druce, Proc. Zool. Soc. Lond. p. 596, pl. XXXIII. fig. 2 (1895).

Labuan (Low).

Described from a male—the only known specimen—in the collection of Messrs. Godman and Salvin.

Genus, PRATAPA, Moore.

457. *Pratapa lucidus*, H. H. Druce.

Pratapa lucidus, H. H. Druce, *t. c.* p. 596, pl. XXXIII. fig. 3 (1895).

Labuan (Low and Waterstradt); Kuching, Mt. Matang —3,200 ft. and Quop (Sar. Mus.).

Also recorded from Sumatra.

The Sarawak specimens differ from Druce's figure in being darker blue, and the prominent blue striae in the apex of fore-wing are hardly distinguishable in the Sarawak specimens.

Injury. ♂, long bite removing costal-apical portion of left fore-wing.

458. *Pratapa sannio*, H. H. Druce.

Pratapa sannio, H. H. Druce, *t. c.* p. 596, pl. XXXIII. fig. 15 (1895).

Sandakan (Pryer).

Confined to Borneo.

459. *Pratapa cremera*, de Nicév.

Pratapa cremera, de Nicéville, Journ. As. Soc. Beng. LXIII. pt. II. p. 37, pl. V. fig. 16, ♂ (1895).

Trusan (Sar. Mus.).

Previously recorded from Java only.

[There are four closely allied species: *P. cotys*, Hew. from India and Burma, *P. anysis*, Hew. from Celebes and the Philippines, *P. sannio*, H. H. Druce, from Sandakan, and the above recorded from Java. I am inclined to consider all as mere topomorphs of *cotys,* but it is curious that both *cremera* and *sannio* should occur in Borneo]. R. S.

460. *Pratapa devana,* H. H. Druce.

Pratapa devana, H. H. Druce, Proc. Zool. Soc. Lond. p. 597, pl. XXXIII. figs. 4 and 5 (1895).

Mt. Kina Balu and Labuan[1] (Waterstradt); Mt. Matang and Santubong (Sar. Mus.).

Confined to Borneo, where it is evidently a mountain species.

461. *Pratapa calculis,* H. H. Druce.

Pratapa calculis, H. H. Druce, Proc. Zool. Soc. Lond. p. 598, pl. XXXIII. figs. 6 and 7 (1895).

Mt. Kina Balu (Waterstradt); Mt. Matang—3,200 ft. and Mt. Santubong—2,800 ft. (Sar. Mus.).

Confined to Borneo.

A good series in the Sarawak Museum presenting no variations.

Injury. ♂, large asymmetrical bite removing anal portion of both hind-wings.

Genus, TAJURIA, Moore.

462. *Tajuria jalindra,* Horsf.

Amblypodia jalindra, Horsfield, Cat. Lep. E. I. C. p. 109 (1829).

Labuan (Low and Waterstradt); Kuching (Sar. Mus.).

Distribution: Java, Sumatra and Nias.

Injury. ♂, deep bite removing tail of left hind-wing.

463. *Tajuria maculatus,* Hew.

Iolaus maculatus, Hewitson, Ill. Diurn. Lep. Lyc. p. 47, pl. XXI. figs. 29, 30 (1865).

Mt. Kina Balu (Waterstradt).

Distribution: Sikkim and Assam.

464. *Tajuria longinus,* Fab.

Hesperia longinus, Fabricius, Ent. Syst. Suppl. Vol. V. p. 430 (1798).

Sarawak (coll. Druce).

Distribution: India, Ceylon, Burma, Malacca, Sumatra and Java.

465. *Tajuria cyrus,* H. H. Druce.

Tajuria cyrus, H. H. Druce, Proc. Zool. Soc. Lond. p. 600, pl. XXXIII. figs. 10, 11 (1895).

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[1] It is important to remember that "Labuan" in connexion with Waterstradt's name does *not* mean the low-lying island off the north coast of Borneo, but the mainland opposite to Labuan which is for the most part hilly country. Druce quotes a note of Dr. Staudinger to this effect.

Mt. Kina Balu only (Waterstradt).

"Allied to *T. mantra,* Felder, but larger" (Druce, *l. c.*).

466. *Tajuria mantra,* Feld.

Pseudolycaena mantra, Felder, Wien. Ent. Monatsch. Vol. IV. p. 396, n. 9 (1860).

Mt. Kina Balu (Waterstradt); Labuan (Low); Mt. Santubong—2,600 ft. (Sar. Mus.).

Druce says it is a common insect in Borneo; collecting in Sarawak however does not bear this out.

Distribution: Burma, Malacca, Sumatra and Celebes.

467. *Tajuria isaeus,* Hew.

Iolaus isaeus, Hewitson, Ill. Diurn. Lep. Lyc. p. 44, pl. XIX. figs. 13, 14 (1865).

Tajuria relata, Dist, Rhop. Malay. p. 246, pl. XXI. fig. 12, ♀ (1884).

Sarawak (Hewitson); common near Kuching (Sar. Mus.).

De Nicéville suggests that the *T. isaeus,* Hew. recorded by Grose-Smith and Kirby from Sumatra should be referred to *Britomartis cleoboides,* Elwes.

468. *Tajuria dominus,* H. H. Druce.

Tajuria dominus, H. H. Druce, Proc. Zool. Soc. Lond. p. 600, pl. XXXIII. fig. 12, ♂ (1895).

Mt. Kina Balu (Waterstradt).

469. *Tajuria tussis,* H. H. Druce.

Tajuria tussis, H. H. Druce, *t. c.* p. 601, pl. XXXIII. figs. 8, 9 (1895).

Labuan (Waterstradt); Trusan and Kuching (Sar. Mus.).

470. *Tajuria cato,* H. H. Druce.

Tajuria cato, H. H. Druce, *t. c.* p. 601, pl. XXXIII. figs. 13, 14 (1895).

Mt. Kina Balu (Waterstradt) only.

471. *Tajuria lucullus,* H. H. Druce.

Tajuria lucullus, H. H. Druce, Ann. Mag. Nat. Hist. (7) Vol. 13, p. 141 (1904).

Mt. Kina Balu only (coll. Druce).

Closely allied to *T. cato.*

472. *Tajuria blanka,* de Nicév.

Tajuria blanka, de Nicéville, Journ. As. Soc. Beng. Vol. LXIII. p. 39, pl. IV. fig. 4 (1894).

Mt. Kina Balu (Waterstradt).

Also recorded from the Battak Mountains, Sumatra.

Druce records a fine female received from Dr. Staudinger, which, he says agrees well with de Nicéville's figure and description except that the thorax is white instead of drab.

473. *Tajuria berenis,* H. H. Druce.

Tajuria berenis, H. H. Druce, Proc. Zool. Soc. Lond. p. 674, pl. XXXI. fig. 6 (1896).

Mt. Kina Balu only (Waterstradt).

474. *Tajuria sunia,* sp. n. (Fig. 7).

Upperside. Bright pale blue, almost the same shade as in *T. tussis. Fore-wing:* costal margin and apex black fuscous as in *T. berenis,* Druce. *Hind-wing:* a narrow costal margin of fuscous broadening slightly at apex as in *tussis.* Inner margin whitish grey. A thin dark anteciliary line. Two short tails bordered and tipped with white. Cilia fuscous. At anal angle a touch of orange succeeded outwardly by a small black spot and then a small white spot.

Underside. Grey as in *tussis. Fore-wing:* a very faint post-discal lunular line of which all but the lunules above 1st and 2nd median nervules is almost obsolete: a sub-marginal line tapering from anal angle and finally disappearing between the discocellulars. *Hind-wing:* post-discal line and anal markings as in *tussis,* except that the orange yellow is slightly more extensive and the sub-marginal border of the upper wing is continued on the hind-wing as far as the orange anal patch. Cilia grey.

Exp. al. 39 mm.

Type (and only known specimen) from Mt. Penrissen, 3,500 ft., Sarawak (Sar. Mus.).

Allied to *T. berenis,* Druce, from which it differs in the markings of the underside, notably in the development of a rather larger anal patch of orange.

475. *Tajuria donatana,* de Nicév.

Tajuria donatana, de Nicéville, Journ. As. Soc. Beng. Vol. LVII. pt. 2, p. 287, n. 18, pl. XIV. fig. 15 (1888).

Labuan (Low); Mt. Santubong and Mt. Matang (Sar. Mus.).

Distribution: Upper Tenasserim and Sumatra.

Fairly common in Sarawak. Differs from de Nicéville's description in the thin white line, which borders anal spots on underside of hind-wing, being interrupted. The black spot in first median interspace is somewhat larger than in de Nicéville's figure, as noticed by Druce in a single male in the Godman-Salvin collection.

Injuries. (i) wide symmetrical bite removing hind-margin of hind-wings and lower half of same in fore-wings. (ii) small piece from anal angle of right hind-wing.

476. *Tajuria travana,* Hew.

Myrina travana, Hewitson, Ill. Diurn. Lep. Lyc. p. 38, pl. XVII. figs. 59, 60 (1865).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt); Labuan (Low); Madihit, Mt. Matang and Kuching (Sar. Mus.).

Very common on the sunlit edges of old jungle adjoining some paddy farms in the Madihit hills.

Also recorded from Malacca, Singapore and Sumatra.

Injuries. (i) large bite from hind-margin of right fore-wing. (ii) large bite removing anal angle of left hind-wing.

Genus, BULLIS, de Nicéville.

477. *Bullis buto,* de Nicéville.

Britomartis buto, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. IX. p. 308, pl. P. fig. 41, ♀ (1895).

Limbang and Kuching (Sar. Mus.).

Distribution: Burma and Sumatra.

Common in the neighbourhood of Kuching. Rests with anal lobes everted and outer tails erect, giving the impression of a butterfly's head and antennae. I have noticed the same in *Lehera anna* males, in several species of *Arhopala, Deudorix* and *Rapala.*[1]

Genus, BRITOMARTIS, de Nicéville.

478. *Britomartis cleoboides,* Elwes.

Tajuria cleoboides, Elwes, Proc. Zool. Soc. Lond. p. 637, pl. XLIV. figs. 4, 5 (1892).

Borneo.[2]

Distribution: Burma, Sumatra and Java.

479. *Britomartis stigmata,* H. H. Druce.

Tajuria stigmata, H. H. Druce, Ann. Mag. Nat. Hist. (7). Vol. 13, p. 141 (1904).

Simanggang (Sar. Mus.).

This species has only two sub-costal nervules in fore-wing and should therefore be referred to the genus *Britomartis* instead of *Tajuria.*

In a letter (May, 1904), Mr. Druce recognized this.

Genus, THAMALA, Moore.

480. *Thamala marciana,* Hew.

Myrina marciana, Hewitson, Ill. Diurn. Lep. Lyc. p. 34, pl. XVI. fig. 44, ♂. pl. XII. figs. 12, 13, ♀ (1863).

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[1] For notes on this habit among *Lycaenidae*, see Longstaff, *Trans. Ent. Soc. Lond.* 1908, pp. 656, 657, also Poulton, *Essays on Evolution* 1908, p. 281.

[2] de Nicéville identified one of Hewitson's figures of *T.isaeus* as this species and he gives the distribution noted above.

Borneo (Butler); Sarawak (Hewitson); S. E. Borneo (Doherty).[1]

Distribution: Malacca and Sumatra.

Genus, HYPOLYCAENA, Felder.

481. *Hypolycaena erylus,* Godt.

Polyommatus erylus, Godart, Enc. Méth. Vol. IX. p. 633, n. 60 (1823).

Hypolycaena erilus, Snellen, Tijd. voor. Ent. Vol. XXI p. 23, n. 95 (1878).

Hypolycaena andamana, Moore, Proc. Zool. Soc. Lond. p. 589 (1877).

Trusan, N. Borneo (Everett); Labuan (Low and Waterstradt); Limbang, Samarahan, Quop, Satap, Kuching and Mt. Matang (Sar. Mus.).

Distribution: Sumatra.

Two shades of colour are noticeable in the Sarawak specimens.

482. *Hypolycaena thecloides,* Feld.

Myrina thecloides, Felder, Wien. Ent. Monatsch. Vol. IV. p. 395 (1860).

Labuan (Low and Waterstradt); North Borneo, Lawas, Marapok Mtns., Trusan, Lobang, Santubong, Buntal and Kuching (Sar. Mus.).

Distribution: Sumatra.

Genus, CHLIARIA, Moore.

483. *Chliaria skapane,* H. H. Druce.

Hypolycaena skapane, H. H. Druce, Proc. Zool. Soc. Lond. p. 604, pl. XXXIII. figs. 16 ♂ and 17 ♀ (1895).

Mt. Kina Balu (Waterstradt).

Confined to Borneo.

Druce (*op. cit.* p. 675, 1896) refers this species and the next to the genus *Chliaria.*

484. *Chliaria phemis,* H. H. Druce.

Hypolycaena phemis, H. H. Druce, *op. cit.* p. 604, pl. XXXIII. fig. 18 ♂ (1895).

Mt. Kina Balu (Waterstradt); near Batu Lawi and Matang (Sar. Mus.).

A rare species; four examples in the Sarawak Museum: a female captured March 1898, a male in December 1909, and two more males in the mountainous region near Batu Lawi,

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[1] de Niceville (*Butt. Ind,* Vol. III. p. 388) records a specimen of *T. miniata* Moore, from S. E. Borneo which exactly agrees with the figure and description of *marciana,* Hew; and he considers the two species identical. The distribution of *miniata* is given as Upper Tenasserim, Burma and Mergui.

May 1911. These last have the outer anal spot rather larger than that figured by Druce.

Confined to Borneo.

485. *Chliaria mimima,* H. H. Druce.

Chliaria mimima, H. H. Druce, *t. c.* p. 605, pl. XXXIV. fig. 1, ♂ (1895).

Mt. Kina Balu and Labuan (Waterstradt); Mt. Matang—3,200 ft., and Kuching (Sar. Mus.).

Mr. Druce kindly identified a pair in the Sarawak Museum for me. He says (*in litt.*) that *mimima* may prove to be a form of *C. tora,* Kheil,—a Nias Island and Sumatra species; he notes that the blue is much paler and whiter on the hind-wing and less extensive on the forewing than in Kheil's species.

486. *Chliaria balua,* n. sp. (Fig. 6).

Upperside. Fore-wing: chestnut brown with fuscous costal, hind-marginal and inner marginal borders; the hind-marginal border rather broader at apex and anal angle; the inner marginal border narrow. *Hind-wing:* discal patch of iridescent purple; broad costal margin, basal region and hind-margin very narrowly fuscous; inner margin white, slightly suffused with fuscous. A dark anteciliary line bordered inwardly (from 2nd median nervule to sub-median nervure only) by thin white line. Two short tails. Cilia fuscous.

Underside. Fore-wing: basal region pearly grey darkened outwardly to hind-margin with light russet brown. Cell closed by faint double line; post-discal line as in *C. phemis,* but broken at 3rd median nervule. A faint sub-marginal grey line. *Hind-wing:* pearly grey. A prominent, very dark brown spot between costal nervure and 1st sub-costal nervule about $\frac{2}{3}$ from base; below it a thin disjointed orange line sloping outwards slightly to meet a thin dark line bordering the hind-margin and enclosing a broad anal region of yellow. A large rounded dark spot between 1st and 2nd median nervules, succeeded above by small indistinct fuscous internervular spots; anal angle black relieved with few light blue iridescent scales. Yellow region of anal angle relived outwardly by thin whitish line and black anteciliary line.

Exp. al. 28 mm.

Type, (and only known specimen) from Kuching, Sarawak (Sar. Mus.).

The coloration of the upper side is entirely different to any Bornean species of this genus.

Mr. Druce kindly examined this specimen, reporting it as unknown to him.

Genus, SUASA, de Nicév.

487. *Suasa liris,* Staud.

Sithon liris, Staudinger, Iris, ii. p. 110, pl. I. fig. 10, ♂ (1889).

Mt. Kina Balu (Waterstradt) ; Kuching (Sar. Mus.).

Druce notices that "Bornean specimens have the apex and outer margin of the fore-wing below a much duller shade of yellow than the type from Palawan."

Genus, APHNAEUS, Hübn.

488. *Aphnaeus syama,* Horsf.

Amblypodia syama, Horsfield, Cat. Lep. E. I. C. p. 107 (1829).

Aphnaeus peguanus, Moore, Journ. As. Soc. Beng. Vol. LIII. Pt. 2, p. 26 (1884).

Aphnaeus orissanus, Moore, *l. c.* p. 27.

Aphnaeus frigidus, Druce, Proc. Zool. Soc. Lond. p. 350, pl. XXXII. fig. 10 (1873).

Labuan (Low and Waterstradt) ; Lawas, Baram, and Mt. Lingga (Sar. Mus.).

Distribution: Sikkim, Assam, Burma, Malay Peninsula, Java, Sumatra and Philippines.

Injury. ♀, anal angle of right hind-wing removed.

489. *Aphnaeus lohita,* Horsf.

Amblypodia lohita, Horsfield, Cat. Lep. E. I. C. p. 106 (1829).

Mt. Kina Balu and Labuan (Waterstradt) ; Baram, Bintulu, Mt. Matang and Kuching (Sar. Mus.).

Distribution: India, Ceylon, Philippines, China and Malaya.

490. *Aphnaeus vixinga,* Hew.

Aphnaeus vixinga, Hewitson, Ent. Mo. Mag. XII. p. 39 (1875).

Borneo (Low).

Not recorded from elsewhere.

Group 3. *CHERITRARIA.*[1]

The eleven Bornean genera comprising this group may be conveniently summarized as follows:—

A^1 Inner tail from end of sub-median nervure the longer.
  B^1 Both sexes, fore-wing with two sub-costal nervules. Male without secondary sexual characters. 1. *Zeltus.*

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[1] This group corresponds to the *Myrina Group* of de Nicéville. In a footnote however, that author noted that *Cheritra* would have been a much better name, as *Myrina silenus* really belonged to his ninth division, the *Loxura Group.* I have therefore adopted his suggestion.

B^2 Both sexes, fore-wing with three sub-costal nervules, (except the genus *Thrix,* which has four).
C^1 Male with secondary sexual character on
D^1 inner margin of hind-wing and long hairs along inner margin of fore-wing 2. *Purlisa.*
D^2 costa of hind-wing. 3. *Manto.*
D^3 underside of inner margin of fore-wing. 4. *Mantoides.*
D^4 sub-median nervure of fore-wing. 5. *Virgarina.*
D^5 below sub-median nervure of fore-wing. 6. *Thrix.*
C^2 Male without secondary sexual character. 7. *Charana.*
B^3 Three sub-costal nervules in fore-wing of female olny.
E^1 Male with two sub-costal nervules; no secondary sexual characters. 8. *Jacoona.*[1]
E^2 Male with four sub-costal nervules; tuft of hair on underside of inner margin of fore-wing. 9. *Neocheritra.*

A^2 Outer tail from end of first median nervule the longer. Both sexes with three sub-costal nervules.
F^1 Hind-wing of male with small tuft of hairs at base of costal interspace. 10. *Cheritra.*
F^2 Fore-wing of male with glandular patch of scales in centre. 11. *Ritra.*

Genus, ZELTUS, de Nicév.

491. *Zeltus etolus,* Fab.

Papilio etolus, Fabricius, Mant. Ins. Vol. II. p. 66, n. 620 (1787).

Hypolycaena amasa, Hewitson, Ill. Diurn. Lep. p. 51, n. 8 (1865).

Mt. Kina Balu (Waterstradt); Labuan (Low); Marapok Mts., Banting, Santubong, Mt. Matang, Quop and Kuching (Sar. Mus.); S. W. Borneo (Ind. Mus.).

Distribution: India and Malaya.

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[1] Distant in describing this genus states that it has four sub-costal nervules; but Druce in *Proc. Zool. Soc. Lond.* p. 679 (1896) pointed out that the male has but two and the female three.

Taken all the year round in Sarawak; only one female in a series of twenty specimens in the Sarawak Museum. The undersides vary a good deal in the intensity of the brown colouring and the transverse line in most of the examples before me is much straighter than in the Indian example figured by de Nicéville in *Butterflies of India.*

Injury. ♂, small asymmetrical bite removing the two inner tails and part of the anal angle of right hind-wing.

Genus, PURLISA, Distant.

492. *Purlisa gigantea,* Distant. (Fig. 4, ♂).[1]

Iolaus (*Purlisa*) *giganteus,* Distant, Ent. Mo. Mag. Vol. XVII. p. 245 (1881).
id Rhop. Malay. p. 250, pl. XXI. fig. 28, ♀ (1885).
Purlisa giganteus, Shelford, Journ. Roy. As. Soc. Str. Br. No. 33, p. 257, ♂ (1900).

Sarawak (coll. Druce); Mt. Matang—3,200 ft. (Sar. Mus.). Also recorded from Penang.

Evidently a rare species. Distant records a single specimen from Penang and one unlocalised example in the collection of Mr. F. Moore. Druce records a single female from Sarawak; and there is a pair in the Sarawak Museum, taken in March 1898 and April 1902 on the summit of Mt. Matang. In regard to the position of this genus, Distant placed it between *Cheritra* and *Neomyrina;* de Nicéville referred it to his *Thecla Group,* placing it next to *Tajuria.* Druce suggested it was more likely to be related to *Cheritra,* and the discovery of the male with secondary sexual characters helps to bear this out. De Nicéville judged from Distant's figure that the tails were not long enough for inclusion in his *Myrina Group,* hence his reason for reference to the *Thecla Group.*

However the inner tails of the Sarawak examples reach the required half-inch, so I include it now in the *Myrina* (*Cheritraria,* mihi) Group.

Genus, MANTO, de Nicév.

493. *Manto martina,* Hew.

Myrina martina, Hewitson, Ill. Diurn. Lep. Lyc. Suppl. p. 3, t. 2, figs. 70, 71 (1869).

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[1] While for the general appearance of this species the figure is good, no attention should be paid to the neuration depicted as it unfortunately suffers from the over-zealous attentions of the reproducer.

Mt. Kina Balu (Waterstradt); Kiou[1] (Hanitsch); Labuan (Low and Waterstradt); Limbang, Matang, Kuching and Pangga (Sar. Mus.); South Borneo (Ind. Mus.).

Distribution: Burma, Malay Peninsula and Sumatra.

Genus, MANTOIDES, H. H. Druce.

494. *Mantoides licinius*, H. H. Druce.

Mantoides licinius, H. H. Druce, Proc. Zool. Soc. Lond. p. 677, pl. XXXI. figs. 10 ♂, 11 ♀ (1896).

Mt. Kina Balu (Waterstradt and Everett); Mt. Santubong and Mt. Matang (Sar. Mus.).

Only recorded from Borneo.

The single female in the Sarawak Museum has the dark anal markings of the hind-wing somewhat heavier than in the female figured by Mr. Druce.

Injury. ♂, small piece from anal angle of right hind-wing removing the inner tail.

Genus, VIRGARINA, H. H. Druce.

495. *Virgarina scopula*, Druce.

Sithon scopula, Druce, Proc. Zool. Soc. Lond. p. 353, pl. XXXIII. fig. 2 (1873).

Sandakan (Elwes); Mt. Kina Balu (Waterstradt); Labuan (Low and Waterstradt); Baram, Mt. Lingga and Kuching (Sar. Mus.).

Only recorded from Borneo.

Injury. ♀, large asymmetrical bite removing the anal region of right hind-wing and part of the same of the left hind-wing.

Genus, THRIX, Doherty.

496. *Thrix gama*, Dist.

Neocheritra gama, Distant, Rhop. Malay. p. 462, fig. 128, ♀ (1886).

Thrix gama, H. H. Druce, Proc. Zool. Soc. Lond. p. 678, pl. XXXI. fig. 13, ♂ (1896).

Labuan (Waterstradt).

Recorded from Penang and Sumatra.

Genus, CHARANA, de Nicév.

497. *Charana splendida*, n. sp. (Fig. 3, ♂).

Charana mandarinus, H. H. Druce, *nec* Hewitson, Proc. Zool. Soc. Lond. p. 676, ♀ (1895).

Mt. Kina Balu (Waterstradt); Kuching (Sar. Mus.).

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[1] In the account of his expedition to Mt. Kina Balu in March 1899 (*Journ. Str. Br. Roy. Asiat. Soc.* No. 34. 1900, pp. 82-84.), Dr. Hanitsch records the capture of 47 species of Rhopalocera of which only 4 were Lycaenidae—collected during ten days.

Druce records a single female which differs from the Indian species *C. mandarinus,* Hew., "by having a greater area of white on the hind-wing above and by the yellow on the hind-wing below being nearly all replaced by white; the black angular markings and spots towards the anal angle are larger and more prominent, so it may possibly represent a different species, but until the male is discovered it is impossible to be certain." (*l. c.*).

A fine male was taken near Kuching in March 1911, which differs from the male *mandarinus* in a similar way, so that I have adopted Mr. Druce's suggestion and proposed a new name for the Bornean form.

The male differs from Hewitson's species on the upperside in the following points:—(i) on the upperside of fore-wing the blue area does not extend as far up the cell as depicted in de Nicéville's figure,[1] nor does it reach the first median nervule[2]; (ii) de Nicéville's figure shows a black mark below the first median nervule which is totally absent in *splendida;* (iii) on the underside of fore-wing the post-discal band is succeeded by a broad hind-marginal band of uniform rufous brown, unrelieved by a dark submarginal line as figured by de Nicéville for *mandarinus;* (iv) the anal region of the hind-wing is white, not yellow (thus agreeing with Druce's description of the female) and (v) the black markings of anal region are distinctly heavier, that nearest the inner-margin being a straight bar, not irregular as shown in de Nicéville's figure.

Injury. ♂, a small triangular excision at anal angle of right hind-wing removing the outer tail. (Vide fig. 3).

498. *Charana? abnormis,* sp. n. (Fig. 10).

MALE. *Upperside.* Dark fuscous. *Fore-wing:* including cilia, uniform dark fuscous. *Hind-wing:* dark fuscous, except for large anal region opalescent white, extending from 3rd median nervule to inner margin and bordered by dark anteciliary line. Anal angle lobate. Cilia white round anal half, mixed with fuscous for remainder.

Underside. Fore-wing: ochreous, paler towards inner margin, darker along hind-margin and at anal angle. *Hind-wing:* white, spotted with dark brown. Broadly ochreous along basal half of costa, succeeded by a large quadrate ochreous spot reaching the sub-costal nervure, followed by a small ochreous brown spot just before the apex, which forms the first of a post-discal row; the second spot immediately below it, is larger, the third transverse, the fourth, fifth and sixth smaller and darker, sloped towards the inner margin; the seventh V-shaped and shifted outwards, the eighth elongate sloping upwards to inner margin. A spot at base of median nervure; another just beyond the cell; a large quadrate dark brown spot below 1st median nervule followed by another nearer the base on the inner margin; a large dark spot on anal lobe, a rough dark line on each side; a large dark spot (exterior to post-discal row) between 1st and 2nd median nervules; ochreous brown spots along hind-margin above 3rd median nervule to apex. Black anteciliary line. Abdomen below ochreous; above dark fuscous.

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[1] De Nicéville, *Butterflies of India,* Vol. III, pl., XXVIII fig. 222, male.

[2] Hewitson says of this blue region "bounded by the inner margin and the first median nervule." (III *Diurn. Lep.*, p. 28, n. 4. 1863).

Exp. al. ♂, 34 mm.

Mr. Druce kindly examined this specimen for me and reported it as "probably new and when perfect has long tails and comes into the *Manto* Group of genera—most likely new genus. Your specimen seems to be a ♂" (*in litt.* March, 1911).[1]

The specimen before me has no secondary sexual characters.

Genus, JACOONA, Distant.

499. *Jacoona jusana,* H. H. Druce.

Jacoona jusana, H. H. Druce, Proc. Zool. Soc. Lond. p. 609, pl. XXXIV. fig. 3, ♂ (1895).

Sandakan (coll. Druce); Labuan (Waterstradt); Limbang and Kuching (Sar. Mus.).

Only recorded from Borneo.

Closely allied to *J. anasuja,* Felder (from Malay Peninsula and Sumatra), and to the next species (*J. metasuja,* H. H. Druce); and from an examination of the figures and descriptions of these three species, one might suggest that they are but local races of one species. Thus *anasuja* occurs in the Malay Peninsula and Sumatra; *jusana* and *metasuja* in Borneo, the former from Sandakan to Sarawak and the latter on Mt. Kina Balu only. A male in the Sarawak Museum has a thin blue apical band intermediate in width between these last two species.

Injuries. (i) ♂, both tails cut off and neat circular bite removing the large anal spot on left hind-wing. (ii) ♀, large bite diagonally across the left hind-wing removing more than half the wing.

500. *Jacoona metasuja,* H. H. Druce.

Jacoona metasuja, H. H. Druce, *l. c.* p. 609, pl. XXXIV. fig. 4, ♂ (1895).

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[1] A fine male has just been captured (October 1911) on Mt. Klingkang, Sarawak; it has two short tails, (like the female *Thamala miniata*, Moore, figured by de Nicéville in *Butterflies of India*, Vol. III, pl. XXVIII, fig. 213), the outer of which from the 1st median nervule is 6 mm. long, the inner from sub-median nervure is 5 mm. This feature together with certain peculiarities of the neuration will in all probability necessitate the founding of a new genus as Mr. Druce suggests; this point I hope to settle in the near future.

Mt. Kina Balu (Waterstradt).
As yet unrecorded elsewhere.

Genus, NEOCHERITRA, Distant.

501. *Neocheritra amrita,* Feld.

Myrina amrita, Felder, Wien. ent. Monatsch. Vol. IV. p. 395 (1860).
Neocheritra theodora, H. H. Druce, Ent. Mo. Mag. Vol. XXII. p. 155 (1885).

Labuan (Low and Wahnes); Kuching (Ind. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).

Distribution: Malay Peninsula, Nias Island, Billiton and Sumatra.

Var. *theodora,* H. H. Druce, differs from the type by the blue on upperside of male being rather more extensive and of a paler greenish shade. Recorded from Sandakan (Pryer) and Labuan (Waterstradt).

The Sarawak Museum examples are from Mt. Santubong and Kuching and are all referable to this variety.

Injuries. (i) ♂, neat circular excision removing inner tail of left hind-wing. (ii) ♂, both tails evenly cut short. (iii) ♀, an uneven notch out of hind-margin of left fore-wing near the apex and inner tail of left hind-wing cut off.

502. *Neocheritra teunga,* Grose-Smith.

Sithon teunga, Grose-Smith, Ann. Mag. Nat. Hist. ser. 6. Vol. III. p. 317 (1889).

Mt. Kina Balu (Whitehead).

Genus, CHERITRA, Moore.

503. *Cheritra freja.* Fab.

Hesperia freja, Fabricius, Ent. Syst. III. p. 263 (1793).
Cheritra freja var. *ochracea,* H. H. Druce, Proc. Zool. Soc. Lond. p. 610 (1895).

Sandakan (Pryer); Labuan (Low and Waterstradt); Kuching, Satap, Bau (Sar. Mus.); S. W. Borneo (Ind. Mus.); Sarawak, S. E. Borneo (Druce).

Druce differentiates a variety "from the continental Indian form by the whole of the fore-wing as well as the costal half of the hind-wing below being ochraceous, and by the inner black band towards the anal angle being much broader and less broken."

De Nicéville describes the Indian form thus: "Underside of fore-wing and outer margin anteriorly of hind-wing washed with ochraceous." A long series in the Sarawak Museum shows forms varying from grey-ochraceous to ochraceous and the sub-anal markings vary in heaviness and degrees of continuity. It seems therefore unnecessary to give a name to the extreme form since all intermediate forms occur in the same locality.

Distribution: India to Burma, Malay Peninsula, Sumatra and Java.

Injuries. (i) ♂, both tails asymmetrically cut short. (ii) ♂, left and (iii) ♀, right tail cut short.

504. *Cheritra pallida,* Druce.

Sithon pallida, Druce, Proc. Zool. Soc. Lond. p. 352, pl. XXXIII. fig. 3, ♂ (1873).

Sandakan (Pryer); Labuan (Low).

Only recorded from Borneo.

Mr. H. H. Druce has examined the type of this species and considers it a distinct species, but nearly allied to *C. freja,* Fab.

Genus, Ritra, de Nicév.

505. *Ritra aurea,* Druce.

Sithon aurea, Druce, *l. c.* p. 352, pl. XXXIII. fig. 1, ♂ (1873).

Ritra aurea, H. H. Druce, *op. cit.* p. 610, ♀ (1895).

Labuan (Low and Waterstradt); North Borneo, Banting and Kuching (Sar. Mus.).

Also recorded from Perak and Sumatra.

The Sarawak Museum specimens were taken in February, May, June, and from August to November; the females rather more commonly.

Injuries. (i) ♂, neat symmetrical excision in each hind-wing removing both long tails. (ii) ♀, small symmetrical bite from anal end of inner margin of both hind-wings and a small piece out of hind-margin of right fore-wing. (iii-iv) ♀, with one tail cut out. (v-vii) ♂, with one tail cut short or excised.

Group 4. *HORAGARIA.*[1]

Genus, Horaga, Moore.

506. *Horaga albistigmata,* n. sp.

Male. *Upperside.* Dark fuscous, with small well-defined white discal patch in fore-wing, and very faint white line bordering anal angle of hind-wing; anal lobe touched with blue, tails white-tipped. *Underside.* Rich ochreous. *Fore-wing:* sharply defined white discal patch, widest across the base of the 2nd and 3rd median nervules; whitish along inner margin; a dark anteciliary line. *Hind-wing.* A straight dark line from centre of costa across wing to 2nd median nervule, thence edged with metallic green across to the inner margin. Three spots at anal angle black inwardly edged with metallic green, the central spot is large and dusted with white scales. Dark anteciliary line as in fore-wing. Cilia whitish.

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[1] De Nicéville assigned seven genera to this group (characterised by the presence of three tails,) of which six are found in Borneo (the seventh, *Rathinda,* Moore, being confined to India and Ceylon).

Exp. al. 21 mm.

Type, ♂ (and only known specimen) Madihit hills, Sarawak (Sar. Mus.).

Differs from any *Horaga* I have seen in the absence of any blue tint on the upperside; resembles *amethystus* in having no white band in the hind-wing below, but the ground-colour is totally different.

507. *Horaga corniculum,* H. H. Druce.

Horaga corniculum, H. H. Druce, *op. cit.* p. 611, pl. XXXIV. fig. 8, ♂ (1895).

Mt. Kina Balu (Waterstradt); Malinau and Mt. Matang—2000 ft. (Sar. Mus.).

Confined to Borneo.

Allied to the Javan species, *H. holothura,* Swinhoe. A male in the Sarawak Museum differs slightly from Druce's figure in having the blue reduced and the fuscous margins wider on the upperside of hind-wing; the other male has the white discal patch of the fore-wing just extending below the first median nervule, and on the underside the white band is much constricted.

508. *Horaga affinis,* H. H. Druce.

Horaga affinis, H. H. Druce, *l. c.* p. 611, pl. XXXIV. fig. 9, ♂ (1895).

Mt. Kina Balu and Labuan (Waterstradt); Madihit (Sar. Mus.).

Confined to Borneo.

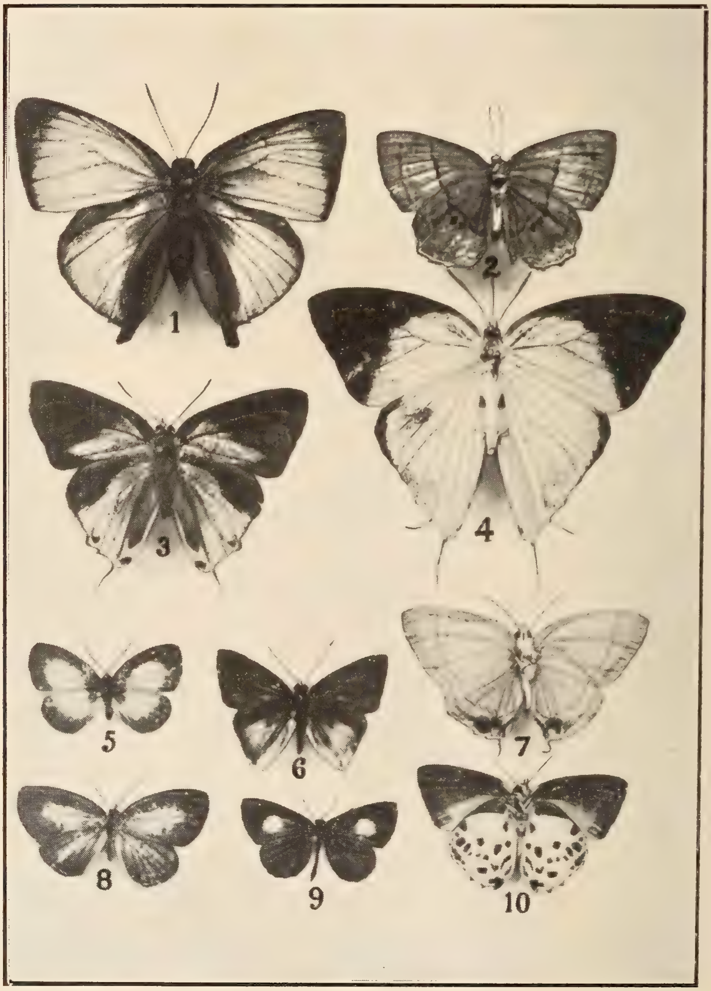
Druce notes a variation from Kina Balu in which the lower half of the white discal spot on the fore-wing above is rather larger than in the type, and the blue area is rather paler; the single example in the Sarawak Museum has this first characteristic. This species is easily distinguished from *corniculum* by having the fore-wings much more pointed.

509. *Horaga amethystus,* H. H. Druce.

Horaga amethystus, H. H. Druce, *op. cit.* p. 118, pl. XI. figs. 4, 5, ♂ and ♀ (1902).

British North Borneo (W. B. Pryer); near Kuching, August 1911 (Sar. Mus.).

A fine female of this rare species, which agrees well with Mr, Druce's description and figure.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BORNEAN LYCÆNIDÆ.

510. *Horaga maenala,* Hew.

Myrina maenala, Hewitson, Ill. Diurn. Lep. Lyc. (Suppl.) p. 7, pl. III. figs. 85, 86 (1869).

Borneo (Hewitson—British Museum).

Genus, SEMANGA, Distant.

511. *Semanga superba,*[1] Druce.

Ilerda? superba, Druce, Proc. Zool. Soc. Lond. p. 350, pl. XXXII. fig. 11, ♀ (1873).

Semanga superba, H. H. Druce, *op. cit.* p. 612, ♂ (1895).

Labuan (Low and Waterstradt); Mt. Matang—3000 ft. (Sar. Mus.).

Distant records it from Malacca, Fruhstorfer from Java, and de Nicéville from Sumatra.

Genus, CATAPOECILMA, Butler.

512. *Catapoecilma bubases,* Hewitson.

Hypochrysops bubases, Hewitson, Ent. Month. Mag. Vol. XII. p. 38 (1875).

Catapoecilma? bubases, Distant, Rhop. Malay. p. 459. pl. XLIV. fig 26 (1882).

Quop (Sar. Mus.).

The only other recorded example of this species comes from Malacca and is now in the British Museum.

The single example in the Sarawak Museum agrees exactly with the underside figured by Distant in *Rhopalocera Malayana,* but on the upperside differs in having slightly broader fuscous margins in the fore-wing, more so in the hind-wing which is somewhat generally suffused with fuscous.

Distant placed this species in the genus *Catapoecilma* with considerable doubt, having noted that the type possessed but two tails. The Sarawak example has a third short filamentous tail at the end of the submedian nervure (the two other tails are from first and second median nervules) I have carefully compared the neuration with that of *C. elegans,* and I have no doubt that its inclusion in this genus is correct.

513. *Catapoecilma elegans,* Druce.

Hypochrysops elegans, Druce, Proc. Zool. Soc. Lond. p.

Sandakan (Pryer); Labuan (Low and Waterstradt); Kerpok hills and Kuching (Sar. Mus.).

Distribution: India, Ceylon, Malay Peninsula and Sumatra (*elegans major,* Druce); Nias Island (*elegans niasana,* Fruhstorfer).

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[1] Druce describes the male as having but two tails; the female is normal in this respect, having three tails.

It seems to be a local species in Sarawak, only a single female having found her way to the Sarawak Museum previous to 1909. Since then some 20 or 30 have been taken in one locality near Kuching, but curiously enough only one male among them.

The females vary somewhat in the extent of blue on upperside of hind-wing; in some, reaching almost to hind-margin, in others almost obsolete.

Injury. ♀, a small piece out of each hind-wing just above the anal angle, probably the result of one bite when the insect was at rest with wings closed.

Genus, Biduanda, Distant.

514. *Biduanda thesmia,* Hew.

Myrina thesmia, Hewitson, Ill. Diurn. Lep. Lyc. p. 32, pl. XIV. figs. 25-27 (1863).

Drupadia fabricii, Moore, Journ. As. Soc. Beng. Vol. LXIII. pt. 2, p. 32 (1884).

Labuan (Low and Wahnes); Sarawak (Wallace); Lawas, ulu Limbang, Simanggang, Sadong, Mt. Matang and Kuching (Sar. Mus.).

Distribution: Burma, Malay Peninsula, Nias, Sumatra and Palawan.

514a. Var. *unicolor,* Staudinger.

Sithon thesmia var. *unicolor,* Staud., Iris, II. p. 111, (1889).

Staudinger describes this variety as differing from the typical form in the underside being dull reddish brown in place of rufous orange. Druce reports this form as common in Borneo and gives the following localities for it:—

Sandakan (Pryer); Kudat (Mus. Druce); Mt. Kina Balu (Waterstradt); Labuan (Low).

A long series in the Sarawak Museum shows a complete gradation between the two forms, the typical form being perhaps predominant. I have taken both forms in one day on Sadong hill. The majority of males are without the dark orange discal patch on upperside of fore-wing.

Injury. ♂, a small piece from anal angle of the right hind-wing.

515. *Biduanda estella,* Hew.

Sithon estella, Hewitson, Ill. Diurn. Lep. Lyc. p. 31, pl. XVI. figs. 50, 51 (1863).

Biduanda estella, var. H. H. Druce, Proc. Zool. Soc. Lond. p. 614 (1895).

Mt. Kina Balu (Waterstradt).

Distribution: Sumatra and Billiton.[1]

Druce records a pair from Kina Balu "which agree well with Hewitson's types from Sumatra, but are somewhat larger."

516. *Biduanda thaenia,* H. H. Druce.

Biduanda thaenia, H. H. Druce, *l. c.* p. 614, pl. XXXIV. fig. 2, ♀ (1895).

Sandakan (Pryer—coll. Godman and Salvin).

The type specimen is noted as unique; and the male unknown.

517. *Biduanda cinesia,* Hew.

Myrina cinesia, (♂ *nec* ♀) Hewitson, Ill. Diurn. Lep. Lyc. p. 29, pl. XIII. figs. 18, 19 (1863).
Biduanda cinesia, H. H. Druce, Proc. Zool. Soc. Lond. p. 614, ♀ (1895).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt); Sarawak (Hewitson); Kuching (Sar. Mus.).

Confined to Borneo.

Injury. ♂, middle tail bitten out of right hind-wing.

518. *Biduanda cineas,* Grose-Smith.

Sithon cineas, Grose-Smith, Ann. Mag. Nat. Hist. (6) Vol. III. p. 318 (1889).

Mt. Kina Balu (Whitehead).

519. *Biduanda hewitsonii,* H. H. Druce.

Myrina cinesia, ♀, Hewitson, Ill. Diurn. Lep. Lyc. p. 29, pl. XIII. fig. 20 (1863).
Biduanda hewitsonii, ♀, H. H. Druce, Proc. Zool. Soc. Lond. p. 615 (1895) *et op. cit.* p. 679, pl. XXXI. fig. 9 (1896).

Sandakan (Pryer and Cator); Labuan (Waterstradt); Kuching and Mt. Matang—3,200 ft. (Sar. Mus.).

Confined to Borneo.

Injuries. (i) ♂, middle tail bitten off right hind-wing. (ii) ♂, middle tail of right hind-wing bitten out. (iii-ix) ♀, the middle tail in one wing either bitten out or cut off short. (x) ♀, both tails symmetrically bitten out. (xi) ♀, both tails symmetrically cut short.

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[1] Mr. P.C.T. Snellen records 22 *Lycaenidae* from the Island of Billiton, of which only the following three are not found in Borneo :—*Niphanda tessellata,* Moore, *Myrina nivea,* Godman, (both Malay Peninsula species) and *Sithon (Drupadia) lisias,* Fabricius, from India and Tenasserim.

519a. *Biduanda hewitsonii* var. *parva*, nov.

MALE. *Upperside. Fore-wing:* outer half of wing dark brown fuscous; basal region, costa and inner margin narrowly fuscous; leaving small sub-discal patch of dull violet. *Hind-wing:* whole of basal and discal region—from costa to inner margin—fuscous, leaving small touch of dull violet between nervules beyond cell; hind-marginal and anal markings as in type form.

Underside: as in type form.

FEMALE. Differs from type form in size and reduction of white sub-anal band and white anal markings on upperside of hind-wing, which are nearly obsolete.

Exp. al. ♂ and ♀, 24 mm. Expanse of average male and female of type form in Sarawak Museum = ♂ 29 mm, ♀ 33 mm; Druce gives measurements: ♂ 1·4 to 1·3 inch, ♀ 1·5 to 1·1 inch.

Kuching (Sar. Mus.).

The coupling together of these specimens as male and female of the same variety is purely guess-work. The single male was taken in June 1900 and the two females in October 1909.

520. *Biduanda staudingeri*, H. H. Druce.

Biduanda staudingeri, H. H. Druce, Proc. Zool. Soc. Lond. p. 615, pl. XXXIV. figs. 5 ♂, 6 ♀ (1895).

Mt. Kina Balu (Waterstradt).

521. *Biduanda similis*, H. H. Druce.

Biduanda similis, H. H. Druce, *t. c.* p. 616 (1895).

Borneo (coll. Druce).

522. *Biduanda imitata*, H. H. Druce.

Biduanda imitata, H. H. Druce, *t. c.* p. 617 (1895).

Borneo (coll. Druce).

Genus, MARMESSUS, Hübn.

523. *Marmessus moorei*, Dist.

Sithon moorei, Distant, Ann. Mag. Nat. Hist. ser. 5. Vol. X. p. 246 (1882).

Marmessus boisduvalii var. *atra*, H. H. Druce, Proc. Zool. Soc. Lond. p. 679 (1896).

Sandakan (Pryer); Kina Balu (Waterstradt); Lawas and Trusan (Everett); Labuan (Low and Waterstradt); (?) Daat Island (Distant); North Borneo, Lawas, Limbang, Kuching, Tegora and Lundu (Sar. Mus.).

Distribution: Malay Peninsula and Sumatra.

I believe *boisduvalii* and *moorei* are but local races of one species which should be known as *moorei* (the older name). The two races may be distinguished thus:—

(i) hind-wing underside markings composed of black lines enclosing white areas
= continental race, *moorei boisduvalii.*
(ii) hind-wing underside markings deep black
= insular race, *moorei moorei.*

boisduvalii var. *atra,* Druce, I take to be a variety of the insular race *moorei moorei,* characterised by an orange discal patch on upperside of fore-wing. This is nicely demonstrated by a long series of males and females in the Sarawak Museum, in which the prominent orange discal patch of var. *atra* becomes smaller and smaller reaching the final stage of obsolescence in typical *moorei.* The undersides are exactly similar in all specimens male and female.

If this view is correct, this species affords a parallel case of variation to that of *Biduanda thesmia,* (see p. 162).

Injuries. (i) ♂, anal angle of right hind-wing bitten off. (ii) ♂, small symmetrical bite across the anal angle of hind-wings removing both tails.

524. *Marmessus surindra* H. H. Druce.

Marmessus surindra, H. H. Druce, Proc. Zool. Soc. Lond. p. 617, pl. XXXIV. fig. 7, ♂ (1895).

Sandakan (Pryer); Kinabatangan and Limbang (Sar. Mus.).

524a. *Marmessus surindra,* var. *albula,* H. H. Druce.

var. *albula,* H. H. Druce, *t. c.* p. 617 (1895).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt); S. E. Borneo (Wahnes).

This variety is also noticed from Palawan.

Genus, EOOXYLIDES, de Nicéville.

525. *Eooxylides tharis,* Hübner.

Oxylides tharis, Hübn., *Zutr.* exot. Schmett. figs. 883, 884 (1837).

Sandakan; Mt. Kina Balu (Everett and Waterstradt); Trusan (Everett); Labuan (Low); Sarawak (Staudinger); Lawas, Trusan, Limbang, Samarahan, Mt. Penrissen—3,300 ft., Kuching and Lundu (Sar. Mus.).

Distribution: India to Malaya—(Peninsula, Nias Island, Billiton, Sumatra and Java).

Very common in Sarawak all the year round.

Injuries. (i) ♂, middle tails symmetrically cut off. (ii-iii) ♂, same absent from left hind-wing. (iv) ♂, from right hind-wing. (v) cut short in left hind-wing and bitten out in right. (vi) ♀, both tails symmetrically bitten out. (vii) ♂, large symmetrical bite removing the whole of anal region of both hind-wings.

526. *Eooxylides etias,* Distant and Pryer.

Hypolycaena etias, Distant and Pryer, Ann. Mag. Nat. Hist. (5). Vol. XIX. p. 268 (1887).
Eooxylides etias, H. H. Druce, Proc. Zool. Soc. Lond. p. 680, pl. XXXI. fig. 12, ♂ (1896).

Sandakan (Pryer and Cator); Mt. Kina Balu (Waterstradt); Kuching (Sar. Mus.).

Confined to Borneo.

The above two species are easily differentiated by the following characteristics:—

(i) *tharis* (male): upperside of hind-wing has narrow grey-blue inner margin.
etias (male): has light blue inner marginal border extending across the anal half of hind-wing.

(ii) *tharis* (both sexes): on underside of hind-wing the post-discal black band is thin and of equal width.
etias (both sexes): on underside of hind-wing this black band is usually heavier and always more so towards the inner margin.

Injuries. (i-iii) ♀, right tail cut short in two specimens, bitten out in a third.

Group 5. *LOXURARIA.*[1]

Genus, LOXURA, Horsfield.

527. *Loxura atymnus,* Cr.

Papilio atymnus, Cramer, Pap. Exot. Vol. IV. p. 82, pl. CCCXXXI. figs. D. E (1780).
Loxura cassiopeia, Distant and Pryer, Ann. Mag. Nat. Hist. (5). Vol. XIX. p. 269 (1887).

Sandakan (Pryer); Labuan (Low and Waterstradt); Lawas, Trusan, Bidi and Kuching (Sar. Mus.); Lundu (Ind. Mus.).

Distribution: India, Malaya and China.

Local in Sarawak and then not plentiful.

Injuries. (i) ♀, both tails symmetrically cut short. (ii) ♂, tails cut short, and a large bite out of each fore-wing, removing three-quarters of the inner marginal region of the left, and hind-marginal region and apex as far as cell of the right fore-wing, in which last only small costal and inner-marginal strips of the wing are left.[1]

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[1] De Nicéville placed the two genera *Loxura* and *Yasoda* in group; only the first named occurs in Borneo. De Nicéville's next group the *Deudorix Group* may well be merged with *Loxuraria*, as, although somewhat heterogeneous, it is also characterised by a single tail and anal angle lobate. De Nicéville divided his *Deudorix Group* into two sub-groups (a) males without, (b) with secondary sexual characters.

Genus, DRINA, de Nicéville.

528. *Drina maneia,* Hew.

Myrina maneia, Hewitson, Ill. Diurn. Lep. Lyc. p. 29, pl. XII. figs. 14, 15 (1863).

Labuan (Low and Waterstradt); Matang and Pangga (Sar. Mus.); Borneo (Ind. Mus.).

Distribution: Singapore.

Injuries. (i) and (ii) ♂, left tail cut off. (iii) ♂, both cut off. (iv) ♂, large bite removing anal angle of right fore-wing. (v) ♂, large bite removing the whole of the anal region of both hind-wings. (vi) ♀, left tail cut off. (vii) ♀, small piece out of inner-margin from anal angle of right hind-wing. (viii) ♀, small piece from hind-margin of right hind-wing.

529. *Drina ninoda,* H. H. Druce.

Drina ninoda, ♂ H. H. Druce, Proc. Zool. Soc. Lond. p. 619 (1895).

Drina ninoda, ♀ H. H. Druce, *op. cit.* p. 680, pl. XXXI. fig. 7 (1896).

Sandakan (Elwes); Labuan (Low); Sapagaya (Cator).

"Allied to *D. donina,* Hew." (Druce *l. c.*).

Genus, LEHERA, Moore.

530 *Lehera anna,* H. H. Druce. (Fig. 1, ♂).

Lehera anna, ♀ H. H. Druce, Ent. Mo. Mag. ser. 2. Vol. VII. p. 78 (1894).

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[1] Dr. G. B. Longstaff (*Trans. Ent. Soc, Lond.*, 1905, p. 90 et id. 1908, p. 658) notes of this species in Calcutta, "its wings are much plaited longitudinally, and when at rest its extremely long tails, crumpled look, and brown colour give it quite the appearance of a dead leaf."

My experience of it in Sarawak is rather different. I first saw it beside a small sunny path at Lawas, and on and off for the next three weeks between the hours of 9 a.m. and midday I met with two or three (never more) individuals in this one spot—, but never elsewhere in collecting round the station at Lawas. I frequently noticed how conspicuous it was by reason of its short weak flight in the sunshine and its habit of settling on the upperside of leaves: its ochreous yellow underside rendering it thus conspicuous rather than the reverse, and the conspicuous lightness of its long tails at once destroyed any chance of a resemblance to a dead leaf. The wings were folded erect, in no way "plaited"; the tails together, not folded; in fact, the insect gave me the general idea of being a conspicuously coloured unpalatable insect, not a procryptically coloured palatable butterfly. Curiously enough Dr. Longstaff (*l.c.* 1908, p. 629) mentions an experiment with a closely allied species, *Loxura arcuata,* which tends to support my suggestion. He gave some butterflies to two Mainas in Ceylon some of which the birds ate with evident relish, others they tasted and then showed signs of dislike. Of the *Loxura* he notes: "The bird gave the *Loxura* a few pecks and then let it alone," suggesting unpalatability."

Lehera anna, ♀ H. H Druce, Proc. Zool. Soc. Lond. p. 680, pl. XXXI. fig. 8, ♀ (1896).

Mt. Kina Balu (Waterstradt); near Kuching and Mt. Matang—2,000 ft. (Sar. Mus.).

Confined to Borneo.

As the male has not yet been recorded, I append a brief description.[1] Curiously enough although some dozen males have been captured in Sarawak, only one female has been taken as yet, and that quite recently (August 24th, 1911); the native collector reported having found it settled on the underside of a leaf.

Upperside. Fore-wing: rich steely purple-blue with very narrow dark fuscous marginal border along the costa, a wider hind-marginal border which broadens towards apex. *Hind-wing:* same colour as in fore-wing, with narrow fuscous border along the costa; broader fuscous border along inner margin "thickly clothed with long fur-like modified scales" (as de Nicéville notes in *Lehera eryx,* ♂). Anal lobe metallic green (in some gold-green) slightly extending up inner margin. *Underside,* emerald-green.

Fore-wing: indistinct white line from costa to inner margin rather nearer to hind-margin than in female. White patch along inner margin does not extend above submedian nervure as figured in female. *Hind-wing:* indistinct discal band as in female followed exteriorly by another similarly indistinct light band, two small white marks at base of anal lobe, which is itself jet black. Tail very thin filamentous, dark fuscous white-tipped. This last feature is in curious contrast to the long and stout white tails of the female.

Injury. ♂, large jagged bite removing anal region of left hind-wing.

530a. *Lehera anna* var. *fulva,* nov.

A single male in the Sarawak Museum differing from the type form on underside only, which is rich ochreous instead of emerald-green.

Loc. Mt. Matang, 3,200 ft. Sarawak.

Type ♂ in Sarawak Museum.

Lehera anna is closely allied to the Indian species *L. eryx,* and possibly should be regarded as a local race only of that species. Wood-Mason and de Nicéville describe a single female under the name *Lehera skinneri,* which they say only differs from *L. eryx* in the underside being clear ochreous instead of emerald-green.

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[1] Mr. Druce has since informed me that the male has been described by Herr Fruhstorfer; I am unable to give the reference.

[2] Wood-Mason and de Nicèville, *Journ. As. Soc. Beng.* Vol. IV. pt. 2, p. 369, n. 138, pl. XV. fig. 3 (1886).

Genus, ARAOTES, Doherty.

531. *Araotes lapithis,* Moore.

Myrina lapithis, Moore, Cat. Lep. Mus. E. I. C. Vol. I. p. 48, n. 79 (1857).

Labuan (Low and Wahnes); Mt. Santubong—2,600 ft., and Kuching (Sar. Mus.).

Distribution: India, Burma, Malay Peninsula, Sumatra and Java.

Druce remarks that it is a common species, though it has not been found so in Sarawak.

Genus, SITHON, Hübner.

532. *Sithon nedymond,* Cr.

Papilio nedymond, Cramer, Pap. Ex. Vol. IV. p. 19, pl. CCXCIX. figs. E. F ♂ (1780).

Thecla chitra, Horsfield, Cat. Lep. E. I. C. p. 97, pl. I. fig. 5, ♀ (1829).

North Borneo, Mt. Derian (alt. 4—5,000 ft.), Mt. Saribu, Padang and Kuching (Sar. Mus.); S. E. Borneo, nr. Banjarmasin (Wahnes); S. Borneo (coll. Godman and Salvin).

Distribution: Burma, Malay Peninsula, Sumatra and Java.

Injury. ♀, right tail cut out.

533. *Sithon micea,* Hew.

Myrina micea, Hewitson, Ill. Diurn. Lep. Lyc. Supp. p. 6, pl. 3, fig. 81, ♂ (1869).

Sithon valida, Druce, Proc. Zool. Soc. Lond. p. 352, pl. XXXIII. fig. 4, ♀ (1873).

Mt. Kina Balu (Waterstradt); Labuan (Low); North Borneo (Sar. Mus.).

Genus, DEUDORIX, Hewitson.

534. *Deudorix epijarbas,* Moore.

Dipsas epijarbas, Moore, Cat. Lep. Mus. E. I. C. Vol. I. p. 32 (1857).

Labuan (Low and Waterstradt); Baram, Mt. Santubong—2,600 ft., Mt. Matang—3,200 ft., and Kuching (Sar. Mus.).

Distribution: India and Malaya.

Sarawak specimens were taken in March, May and June.

Injuries. (i) ♂, small bite from anal angle of right hindwing. (ii) ♀, a similar bite removing tail, but not the anal lobe.

535. *Deudorix staudingeri,* H. H. Druce.

Deudorix staudingeri, H. H. Druce, Proc. Zool. Soc. Lond. p. 621, pl. XXXIV. fig. 10, ♂ (1895).

Labuan (Waterstradt); Mt. Santubong (Sar. Mus.).

Described from a single example in the collection of Dr. Staudinger. The Sarawak Museum contains two males taken in November. As the upperside markings of *epijarbas* are known to be very variable, I suggest that *staudingeri* may prove to be but a variety or seasonal form of Moore's species.

536. *Deudorix diara,* Swinhoe.

Deudorix diara, Swinhoe, Ann. Mag. Nat. Hist. (6) Vol. XVII. p. 357 (1896).

Deudorix diara, H. H. Druce, Proc. Zool. Soc. Lond. p. 681, pl. XXXI. fig. 14, ♂ (1896).

Mt. Kina Balu (Waterstradt); Quop (Sar. Mus.).

Also noticed from the Jaintia Hills.

The single example (a *female*) in the Sarawak Museum differs from Druce's figure of the *male* in the following points: upperside discal patch in fore-wing smaller; basal and discal region of hind-wing fuscous. Underside: the spot closing cell and the post-discal band are edged with white and the general colouring is much lighter.

537. *Deudorix strephanus,* H. H. Druce.

Deudorix strephanus, H. H. Druce, *t. c.* p. 681, pl. XXXI. fig. 15, ♂ (1896).

Mt. Kina Balu (Waterstradt); Mt. Matang—3,200 ft., Mt. Santubong—2,600 ft. (Sar. Mus.).

Confined to Borneo.

The Sarawak Museum specimens were taken in February, March, May, June and November (a single male from the foot of Mt. Matang).

The female seems unrecorded and so I append a brief description of it.

FEMALE. *Upperside. Fore-wing:* uniform fuscous (as in *D. epijarbas,* Moore). *Hind-wing:* uniform fuscous as in fore-wing, but anal region and tail iridescent white. This white patch is developed most between 1st and 2nd median nervules, less between 2nd and 3rd and between 1st median nervule and sub-median nervure; obsolescent above 3rd median nervule. The nervules and edge of wing are delineated by dark fuscous scales. Anal lobe black. Cilia of fore-wing and upper part of hind-wing fuscous, cilia of anal portion of hind-wing white. *Underside* as in male, except that the outer series of spots is a little more regular.

Exp. al. ♀ 45-49 mm. (Sarawak ♂ ♂ 30-42 mm.).

Type ♀ in Sarawak Museum.

General colouring and pattern of upperside very like female *Sithon nedymond,* Cr.

The males vary a lot in development of the rich orange-red patches in both wings.

Injuries. (i) ♂, a small piece from anal angle of left hind-wing. (ii) ♂, a symmetrical bite across the anal angle of both hind-wings. (iii) ♂, a large portion of anal angle removed from left hind-wing. (iv) ♂, a small piece from anal angle of right hind-wing.

Genus, RAPALA, Moore.

538. *Rapala deliochus,* Hewitson.

Deudorix deliochus, Hewitson, Trans. Ent. Soc. Lond. p. 352 (1874).

Labuan (Waterstradt).
Distribution: Burma and Sumatra.

539. *Rapala sphinx,* Fab.

Papilio sphinx, Fabricius, Syst. Ent. p. 520 (1775).
Deudorix varuna, Hewitson, (*nec* Horsfield), Ill. Diurn. Lep. Lyc. p. 22, n. 16, pl. IX. figs. 32, 33 *male,* pl. X. figs. 36, 37 *female* (1863).

Mt. Kina Balu (Waterstradt); Kiou (Hanitsch).
Distribution: East Indies, Sylhet, Burma and Java.

540. *Rapala schistacea,* Moore.

Deudorix schistacea, Moore, Proc. Zool. Soc. Lond. p. 140 (1879).
Deudorix varuna, Wood-Mason and de Nicéville (*nec* Horsfield), Journ. As. Soc. Beng. Vol. XLIX. pt. 2. p. 234, n. 51 (1880).

Kuching (Sar. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).
Distribution: India, Ceylon, Andaman Isles, Sumatra and Java.

541. *Rapala scintilla,* de Nicéville.

Rapala scintilla, de Nicéville, Butt. Ind. Vol. III. p. 461 (1890).

Mt. Kina Balu (Waterstradt).
Distribution: Sikkim and Sumatra.

542. *Rapala varuna,* Horsfield.

Thecla varuna, Horsfield, Cat. Lep. E. I. C. p. 91 (1829).
Deudorix orseis, Hewitson, Ill. Diurn. Lep. Lyc. p. 23 (1863).

Mt. Kina Balu (Waterstradt); Labuan (Low and Waterstradt); Madihit, Limbang and Kuching (Sar. Mus.).

Distribution: India and Malaya.

Injuries. (i) large quadrate bite out of left hind-wing just missing the tail. (ii) a small bite of the same nature but removing the tail.

543. *Rapala chozeba,* Hewitson.

Deudorix chozeba, Hewitson, Ill. Diurn. Lep. Lyc. p. 24, pl. V. figs. 47-48 (1863).

Mt. Kina Balu (Waterstradt); Labuan (Low and Waterstradt).

Originally described from Sumatra.

544. *Rapala pheretima,* Hewitson.

Deudorix pheretima, Hewitson, *t. c.* p. 21, pl. IX. figs. 27-29. (1863).

Mt .Kina Balu and Labuan (Waterstradt); Sarawak (Hewitson); Baram and Kuching (Sar. Mus.).

Distribution: India and Malaya.

545. *Rapala xenophon,* Fab.

Hesperia xenophon, Fabricius, Ent. Syst. Vol. III. pt. I. p. 272 (1793).

Mt. Kina Balu and Labuan (Waterstradt).

Distribution: India and Malaya.

545a. ♀ var. *coerulescens,* Staud.

Deudorix intermedius, var. *coerulescens,* Staudinger, Lep. Palaw. p. 116 (1889).

Sandakan (Pryer).

546. *Rapala barthema,* Distant.

Deudorix barthema, Distant, Rhop. Malay. p. 280 (1885).

Rapala barthema, H. H. Druce, Proc. Zool. Soc. Lond. p. 623, pl. XXXIV. fig. 11, ♂ (1895).

Mt. Kina Balu and Labuan (Waterstradt); Limbang and Kuching (Sar. Mus.).

Distribution: Malay Peninsula.

547. *Rapala suffusa,* Moore.

Deudorix suffusa, Moore, Proc. Zool. Soc. Lond. p. 834, pl. LII. fig. 8 (1878).

Mt. Kina Balu (Waterstradt); North Borneo and Kuching (Sar. Mus.).

Distribution: Burma, Assam and Sumatra.

The two females in the Sarawak Museum differ from ♀ *barthema* in colour of underside being much brighter yellowish-mustard. The hind-marginal line in fore-wing inclines inwards towards the costa more in these specimens than in *barthema.*

548. *Rapala laima,* H. H. Druce.

Rapala laima, H. H. Druce, Proc. Zool. Soc. Lond. p. 624, pl. XXXIV. fig. 12, ♂ (1895).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt).

549. *Rapala drasmos,* H. H. Druce.

Rapala drasmos, H. H. Druce, *t. c.* p. 624, pl. XXXIV. fig. 13, ♀ (1895).

Labuan (Waterstradt).

550. *Rapala domitia,* Hewitson.

Deudorix domitia, Hewitson, Ill. Diurn. Lep. Lyc. p. 19, pl. VI. figs. 6, 7 (1863).

Labuan (Low and Waterstradt); Santubong and Kuching (Sar. Mus.).

Distribution: Malacca, Singapore, Sumatra and Billiton.

A fine male in the Sarawak Museum has the lower half of cell in fore-wing markedly pale; in others this discal streak is more obscure. The undersides vary from pale yellow almost to the brilliant mustard yellow of *suffusa.*

551. *Rapala abnormis,* Elwes.

Rapala abnormis, Elwes, Proc. Zool. Soc. Lond. p. 642, pl. XLIV. fig. 2, ♂ (1892).

Mt. Kina Balu (Waterstradt); Mt. Santubong—2,800 ft., Mt. Matang from foot to summit, 3,200 ft. (Sar. Mus.).

Distribution: Burma and Sumatra.

Genus, BINDAHARA, Moore.

552. *Bindahara phocides,* Fab.

Hesperia phocides, Fabricius, Ent. Syst. Vol. III. pt. I. p. 282, n. 85 (1793).

North Borneo and Mt. Santubong—2,600 ft. (Sar. Mus.).

Distribution: India and Malaya.

552a. var. *phocas,* Staudinger.

Sithon phocides, Fab. var. *phocas,* Staudinger, Iris, II. p. 114 (1889).

Sithon sugriva, Druce (*nec* Horsfield), Proc. Zool. Soc. Lond. p. 351 (1873).

Labuan (Low and Waterstradt); Kuching (Sar. Mus.).

Distribution: Celebes and Philippine Islands.

Mr. Druce kindly identified this variety for me.

Both type form and variety seem very rare in Sarawak.

Genus, VIRACHOLA, Moore.

553. *Virachola smilis,* Hewitson.

Deudorix smilis, Hewitson, Ill. Diurn. Lep. Lyc. p. 18, pl. VIII. figs. 22, 23 ♀ (1863).

Mt. Kina Balu (Waterstradt); Mt. Santubong and Mt. Matang (Sar. Mus.).

Distribution: "East India" (Hewitson); Andaman Isles and Palawan.

A long series of males only the Sarawak Museum, chiefly from the summit of Mt. Santubong; taken all the year round; varying in size from 25 mm. to 41 mm. The basal spots on underside of hind-wing are not so filled up as shewn in de Nicéville's figure of the female. The blue areas of both wings are much more reduced than in the female, as pointed out by Druce.

Injuries. Small ragged bites out of anal angle of left hind-wing in two specimens; a third with symmetrical bite from both hind-wings at anal angle and a fourth with a small piece removed from the same region of the right hind-wing.

As this is the last instance of injured Lycaenidae to be noticed it may be of interest to try and draw some conclusions from all the instances so far recorded in this paper.

It will have been noticed that the Sub-Families of Lycaenidae show signs of enemies' bites in varying degrees culminating in the two extremes shown by the *Gerydinae* and *Theclinae:* the former showing practically no injuries at all, while in sharp contrast to them, the latter afford abundant evidence of attacks made by birds or lizards, sometimes on the hind-margin of the hind-wing, sometimes even on the fore-wing, but more especially on the anal region of the hind-wings. From this, two pairs of diametrically opposite conclusions are suggested: (i) that the small, weak, protectively coloured (above and below) *Gerydinae* fall so easy a prey to their enemies, that no injured specimens ever escape; one bite and the incident of capture is over. Their only chance in the struggle for existence lies in their ability to escape notice, and hence we have the sombre coloured uppersides, which render them very hard to see in flight, and the procryptic undersides which answer their purpose as well as, if not better than, those of any other Lycaenid. This would be in accordance with the view that protectively-coloured butterflies are always palatable.

[Against this conclusion however we should note that one frequently catches injured specimens of the presumably palatable Satyrine—*Ypthima pandacus,* Moore, which is weak in flight and easy to capture: in fact I have more notes of injuries to that species than to any other in Sarawak!].

With the *Theclinae* it would appear that in lieu of any scheme of protective colouring, a different method of defence has been evolved, namely that of directing the enemy's attention to a non-vital spot, which is effected by the development of eye-spots and tails at the anal angle of the hind-wing.[1] Thus, the enemy's attention is attracted by these showy spots and light tails, so that a dart is made in their direction rather than in the vital region of the head or body; but the loss of a portion of the hind-wing is of little moment to the butterfly, who thus escapes. The finding of so many *Theclinae* injured in this manner leads to the second part of our first conclusion, namely that this kind of Lycaenid is recognized among birds and lizards as palatable food, hence the evidence of numerous attacks, of which no doubt a certain percentage prove fatal.

(ii) The 1st of our second pair of conclusions suggested is that put forward now again by opponents of the Mimicry Theories, viz. that butterflies are *not* attacked thus: there are no injured specimens among the *Gerydinae* because birds and lizards *do not attack them*. Why then we ask, their beautifully protected colouring? Are they unpalatable, and so immune from attacks? Again, if so, why their sombre colouring and why do we not get conspicuously coloured *Gerydinae?*

The second conclusion suggested by the evidence of the *Theclinae,* is that they are unpalatable and that their would-be destroyers (principally young and inexperienced enemies) on tasting them have given up the pursuit because of their unpalatability, thus accounting for the number of "sampled" specimens noticed.[2]

It is altogether beyond the scope of the present paper to go into a discussion of this interesting problem, which would involve a lengthy review of all the external evidence collected by various writers on this and other Families of *Rhopalocera* in many other parts of the world, and it must suffice now to point out that the evidence on the whole favours our first pair of conclusions, although there are also published records apparently in support of the second pair of conclusions.

But like most of these curious theories, *experiments and observations* are wanted badly, be it either to confute or corroborate; and it is admittedly "up" to those of us who live in the tropics to provide the evidence of such experiments and observations.

---

[1] For a lucid exposition of this theory see Poulton in *Essays on Evolution* 1908. pp. 281-3 and 325; also Shelford, *Journ. Str. Br. Roy. As. Soc.* No. 35. 1901. pp. 34, 35; also Marshall, *Trans. Ent. Soc. Lond.* 1902. pt. 353—375 and plates IX, X and XI.

A different conclusion is arrived at by A. Tylor *(Colouration of Animals and Plants.* 1886. p. 22), whose theory is (i) that coloration is primarily dependent upon the direct action of light, and (ii) that coloration follows the chief lines of structure. He states that "It is not suggested that the coloration is applied to important parts *in order to* emphasize them, but rather that being important parts, they have become naturally the seats of most vivid colour."

According to the theory of Directive Markings however, the conspicuous coloration at the anal angle of the hind-wing in *Theclinae* has been developed for that very purpose, i.e., *in order to emphasize them*, because they are *not* important parts. Mr. Tylor notes further on, that Natural Selection acts on his fundamental theory "by suppressing, or developing, structurally distributed colours."

[2] See note on page 86.

Genus, SINTHUSA, Moore.

554. *Sinthusa nasaka,* Horsfield.

Thecla nasaka, Horsfield, Cat. Lep. E. I. C. p. 91 (1829).

Mt. Kina Balu (Waterstradt); S. Borneo (Ind. Mus.).

Druce considers this species synonymous with the next (*S. amba,* Kirby).

Distribution: India, Sikkim, Assam, Sumatra and Java.

555. *Sinthusa amba,* Kirby.

Hypolycaena amba, Kirby, Ill. Diurn. Lep. Lyc. Supp. p. 32, pl. V. b, figs. 44-46 (1878).

Sandakan (Pryer); Bidi (Sar. Mus.).

Distribution: Mergui, Myitta, Burma, Malay Peninsula and Sumatra.

A single female in the Sarawak Museum, which agrees well with Kirby's descrption.

556. *Sinthusa amata,* Distant.

Sinthusa amata, Distant, Rhop. Malay. p. 461, pl. XLIV. fig. 20, ♀ (1886).

Sinthusa amata, H. H. Druce, Proc. Zool. Soc. Lond. p. 625, ♂ (1895).

Mt. Kina Balu (Waterstradt); Kiou (Hanitsch); Kuching, Bidi, Tegora (Sar. Mus.).

Distribution: Penang.

Sarawak examples taken from September to December and one in March. The males agree well with Mr. Druce's description.

[Part IV of "The Butterflies of Borneo" dealing with the Papilionidae (*Pierinae* and *Papilioninae*) is in course of preparation].

Explanation to Plate.

Fig. 1. *Lehera anna,* Druce, ♂ Mt. Matang, November, 1898. Upperside p. 167.

„ 2. *Poritia pasira,* n. sp. ♀ Mt. Matang, December, 1898. Underside p. 122.

„ 3. *Charana splendida,* n. sp. ♂ Matang Road, March 20th, 1911. Upperside p. 155.

„ 4. *Purlisa gigantea,* Distant, ♂ Mt. Matang, March, 1898. Upperside p. 154.

„ 5. *Lycaenopsis lingga,* n. sp. ♀ Mt. Lingga, May, 1909. Upperside p. 96.

„ 6. *Chliaria balua,* n. sp. ♂ Matang Road, May 20th, 1910. Upperside p. 151.

„ 7. *Tajuria sunia,* n. sp. ♀ Mt. Penrissen, 3,500 ft., May 19th, 1899. Underside p. 148.

„ 8. *Nacaduba angusta,* Druce, ♀ Kuching, June 25th, 1897. Upperside p. 101.

„ 9. *Logania drucei,* n. sp. ♂ Matang Road, February 23rd. Upperside p. 85.

„ 10. *Charana? abnormis,* n. sp. Mt. Penrissen, May. 1899. Underside p. 156.

All figures $\frac{5}{6}$ of natural size; specimens in Sarawak Museum.

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STRAITS BRANCH
ROYAL ASIATIC SOCIETY

[No. 61]

JOURNAL

June, 1912.

230986

Agents of the Society

London : Messrs William Wesley & Son
28 Essex Street, Strand
London, W. C.

PRINTED AT THE METHODIST PUBLISHING HOUSE SINGAPORE.

[No. 61]

JOURNAL
# of the
Straits Branch
# of the
Royal Asiatic Society

June, 1912.

SINGAPORE:
PRINTED AT THE METHODIST PUBLISHING HOUSE.
1912.

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THE
STRAITS BRANCH
OF THE
ROYAL ASIATIC SOCIETY.

COUNCIL FOR 1912.

Hon. Dr. D. J. Galloway, *President.*
Hon. A. T. Bryant, *Vice-President for Singapore.*
Hon. J. O. Anthonisz, ,, *Penang.*
Mr. W. G. Maxwell, ,, *F. M. S.*
Dr. R. Hanitsch, *Honorary Secretary.*
Mr. J. Love Montgomerie, *Honorary Treasurer.*
Mr. W. Makepeace, *Honorary Librarian.*

The Bishop of Singapore
Dr. R. D. Keith,
Mr. H. Marriott,
Mr. V. A. Flower,
Councillors.

PROCEEDINGS

of the

Annual General Meeting.

The Annual General meeting was held on February 12th, 1912 at the Raffles Library.

There were present :—

HON. DR. GALLOWAY (President)

HON. C. J. SAUNDERS.	DR. J. M. HANDY.
HON. A. T. BRYANT.	MR. A. HOOD-BEGG.
THE BISHOP OF SINGAPORE	MR. W. MAKEPEACE.
MR. C. F. C. AYRE.	MR. H. ROBINSON.
REV. J. A. B. COOK.	MR. E. ROSTADOS.
MR. V. A. FLOWER.	MR. W. A. SIMS.

DR. R. HANITSCH, ACTG. HON. SECRETARY.

The minutes of the Annual General Meeting of 1911 were read and confirmed.

The Council's report and the Hon. Treasurer's accounts were laid on the table, and on the proposal of the Hon'ble Dr. Galloway, seconded by the Hon'ble A. T. Bryant, adopted.

The members elected during the past year were confirmed in election.

The President expressed the opinion that it was the Society's duty, as a small recognition of Mr. Ridley's work, to elect him an Honorary Member, and he moved accordingly. The Rev. J. A. B. Cook seconded and the motion was carried.

The Hon'ble C. J. Saunders proposed a vote of thanks to the President for presenting to the Society the picture of their late Secretary, Mr. Ridley. The Bishop seconded and the motion was carried with applause.

The election of office-bearers for the new year resulted as follows :—

President	HON. DR. D. J. GALLOWAY.
Vice-President for Singapore ...	HON. A. T. BRYANT.
,, *Penang* ...	HON. J. O. ANTHONISZ.
,, *F. M. S.* ...	MR. W. G. MAXWELL.
Hon. Secretary	DR. R. HANITSCH.
Hon. Treasurer	MR. J. LOVE MONTGOMERIE.
Hon. Librarian	MR. W. MAKEPEACE.
Councillors	THE BISHOP OF SINGAPORE. MR. V. A. FLOWER. DR. R. D. KEITH. MR. H. MARRIOTT.

Annual Report
of the
Straits Branch Royal Asiatic Society
for 1911.

The past year has been one of unusual activity. Not less than four numbers of the Journal were issued, viz. Nos. 57, 58, 59, and 60, and the new edition of the Map of the Malay Peninsula, delayed for so long, was at last published and arrived here in August.

The cost of the map was as follows:—

A.	Mr. van Cuylenberg's charge for compiling and drawing of the map		$500—
B.	E. Stanford's charge for Lithographing and		
	Printing 2000 copies ...	£296:—:—	
	Mounting 800 copies on rollers	£240:—:—	
	Mounting 100 copies to fold...	£ 37:10:—	
		£573:10:	=$4915.71
C.	freight to Singapore ...		$ 42.—
		Total	$5457.71

Messrs. Kelly and Walsh were appointed local agents for the sale of the map, and 358 copies were sold up to the end of December, the Society's share on this being $2486.40. (N. B. The balance sheet shows the sales up to the end of September only.)

The following new members were elected during the year:

Mr. W. R. Armstrong.
,, T. W. Clayton.
Rt. Rev. Bishop C. J. Ferguson-Davie, D.D.
Mr. R. Derry.
,, W. E. Gibbs.
,, J. Griffiths.
Dr. J. M. Handy.
Mr. A. Hood-Begg.
,, A. S. Jelf.
,, H. S. B. Johnson.
Major F. W. Lumsden.
Mr. R. W. Munro.
,, R. M. Richards.
,, G. H. M. Robertson.
,, G. A. Smith-Steinmetz.
Dr. Mildred E. Staley.
Mr. E. A. G. Stuart.
,, E. Valpy.
,, F. G. Worsley-Taylor.

The Society deeply regrets to have to record the death of two of their members, that of the Hon'ble W. D. Barnes, of whom an obituary notice was given in Journal No. 60, and that of Mr. W. Nanson. Mr. Nanson was one of the oldest members of the Society. He was elected in 1889 and served repeatedly on the Council.

Mr. H. N. Ridley, C.M.G., F.R.S., resigned the Secretaryship in October, in view of his approaching retirement. Having been elected in 1888, he had been Secretary during the years 1890-93 ; 1897-1900 ; 1902-11, i., e., during the greater part of the Society's existence, and not in any way in a formal capacity, but as the very soul of the Society.

The Society is much indebted to its President, the Hon. Dr. Galloway, for having kindly presented the enlarged portrait of Mr. Ridley, which has now been placed in the Society's room alongside that of Bishop Hose, also presented by Dr. Galloway some years ago.

R. Hanitsch.
Acting Hon. Secretary.

Singapore,
January, 1912.

HONORARY TREASURER'S ACCOUNT FOR THE YEAR 1911.

	$	c.	$	c.
Balance brought forward from 1910:—				
Mercantile Bank, Fixed Deposit	2700	...		
Chartered Bank, Fixed Deposit	2300	...		
Mercantile Bank, Current Account	326	18		
Chartered Bank, Current Account	139	86		
			5466	04
Receipts in 1911:—				
Subscription for 1908 ...	5	...		
,, ,, 1909 ...	15	...		
,, ,, 1910 ...	75	...		
,, ,, 1911 ...	1005	...		
,, ,, 1912 ...	25	...		
Life membership (three)	150	...		
Sale of Journals ...	230	82		
Sale of Maps (to the end of September only)	1008	...		
Cost of Author's corrections refunded	10	...		
Bank Interest, F. D. & C. A.	219	44		
			2743	26
			8209	30

	$	c.	$	c.
Payments in 1911 —				
Printing of Journal 56 ...	433	10		
do. 57 ...	329	40		
do. 58 ...	415	36		
do. 59 ...	434	52		
Illustrations	56	59		
Printing of Map (£200 on a/c.) ...	1706	67		
Miscellaneous printing ...	19	75		
Bookbinding	24	...		
Salary of Clerk	180	...		
Salary of Peon	29	...		
Petties and Postages ...	110	35		
			3738	74
Balance carried forward:—				
Mercantile Bank, Fixed Deposit	2700	...		
Chartered Bank, Fixed Deposit	1500	..		
Mercantile Bank, Current Account	242	27		
Chartered Bank, Current Account	28	29	4470	56
			8209	30

Audited and found correct,

WALTER MAKEPEACE,

24th January, 1912,

R. HANITSCH, *Honorary Treasurer,*

Straits Branch, Royal Asiatic Society.

Singapore, 22nd January 1912.

List of Members for 1912.

*Life Members. †Honorary Members.

Patron: H. E. Sir Arthur Young, K.C.M.G.

Date of election.		
1903	Abbott, Dr. W. L.	Calcutta.
1905	Acton, R. D.	Singapore.
1909	Adam, Frank	Singapore.
1908	Adams, Hon. A. R.	Penang.
1910	Adams, H. A.	Sarawak.
1910	Adams, H. Powys	England.
1910	Aldworth, J. R. O.	Kuala Lumpur.
1909	Allen, Rowland	Singapore.
1908	Anderson, E.	Singapore.
1911	Anderson, J. W.	Singapore.
1890	Anthonisz, Hon. J. O.	Singapore.
1911	Armstrong, W. R.	Penang.
1908	Arthur, J. S. W.	Christmas Island
1910	Asmus, Ad.	England.
1910	Avetoom, Dr. T. C.	Penang.
1908	*Ayre, C. F. C.	Singapore.
1912	Baker, A. C.	Singapore.
1909	Banks, C. W.	Singapore.
1899	*Banks, J. E.	Iowa, U. S. A.
1899	Barker, Dr. A. J. G.	England.
1910	Barnard, Basil	Taiping, Perak.
1912	Barnard, H. C.	Taiping, Perak.
1904	Bartlett, R. J.	Ipoh, Perak.
1910	Bartley, W.	Java.
1909	Bean, A. W.	Singapore.
1910	Beatty, D.	Malacca.
1910	Benjafield, F. J.	Singapore.
1910	*Berkeley, H.	Perak.
1885	Bicknell, W. A.	Penang.
1901	Bidwell, R. A. J.	Singapore.
1903	Birch, Sir E. W., C.M.G.	England.
1908	*Bishop, Major C. F., R.A.	England.
1901	Bishop, J. E.	Kelantan.
1890	*Blagden, C. O.	London, S. W.
1884	Bland, R. N.	England.
1905	Bland, Mrs. R. N.	England.
1910	Boult, F. F.	Sadong, Sarawak.
1910	Boyd, Hon. D. T.	Singapore.

1910	Brison, Clifford S.	Singapore.
1897	Brockman, E. L., C.M.G.	Kuala Lumpur.
1911	Brooke, J. R.	Singapore.
1909	Brooks, C. J.	Benkoolen, Sumatra.
1909	Brown, A. V.	Penang.
1910	Brown, D. A. M.	Penang.
1887	Bryant, Hon. A. T.	Singapore.
1903	Burn-Murdoch, A. M.	Kuala Lumpur.
1906	Campbell, J.	Calcutta.
1909	Carver, C. J.	Singapore.
1885	Cerruti, G. B.	Penang.
1910	Chancellor, Capt. A. B.	Singapore.
1906	Chapman, W. T.	Penang.
1911	Clayton, T. W.	Kelantan.
1894†	Collyer, W. R., I.S.O.	England.
1897*	Conlay, W. L.	England.
1910	Cook, Hon. W. W.	Singapore.
1899	Cook, Rev. J. A. B.	Singapore.
1910	Croucher, Dr. F. B.	Penang.
1910	Daly, W. D.	England.
1904	Dallas, Hon. F. H.	Sarawak.
1910	Darbishire, Hon. C. W.	Singapore.
1892	Dane, Dr. R.	Penang.
1907	Dent, Dr. F.	Singapore.
1912	Derry, R.	Singapore.
1903*	Deshon, Hon H. F.	England.
1897	Dickson, E. A.	Brunei.
1905	Douglas, R. S.	Baram, Sarawak
1910	Draper, B.	Johore.
1909	Drury, Rev. W.	London.
1910	Dunman, W.	Singapore.
1899	Edmonds, R. C.	England.
1885	Egerton, H. E. Sir W., K.C.M.G.	Lagos, S. Nigeria.
1885	Elcum, J. B.	Johore.
1910	Ellerton, H. B.	Kuala Kangsar, Perak.
1909	Ellis, Hon. E. C.	Singapore.
1910	Engel, L.	Batavia.
1910	Evans, Hon. W.	England.
1891	Everett, H. H.	Sarawak.
1910	Falshaw, Dr. P. S.	Singapore.
1909	Farrer, R. J.	Singapore.
1909	Ferrier, J. C.	Surabaya.
1910	Firmstone, H. W.	Singapore.
1910	Fisher, W. D.	Singapore.
1901	Fleming, T. C.	Perak.
1897*	Flower, Capt. S. S.	Egypt.
1904	Flower, V. A.	Singapore.
1897	Fort, Sir Hugh	London.
1897	Freer, Dr. G. D.	Kuala Lumpur.

1908	Freeman, D.	Kuala Lumpur.
1910*	Frost, Meadows.	Kedah.
1911*	Ferguson-Davie, Rt. Rev. Bishop C. J., D.D.	Singapore.
1909	Gahagan, A. Y.	Singapore.
1905	Galloway, Hon. Dr. D. J.	Singapore.
1897*	Gerini, Lt. Col. G. E.	Italy.
1912	Gibbons, V.	Singapore.
1911	Gibbs, W. E.	Singapore.
1903	Gibson, W. S.	Ipoh, Perak.
1902*	Gimlette, Dr. J. D.	Kelantan.
1910	Glennie, Dr. J. A. R.	Singapore.
1909	Goulding, R. R.	Perlis, Kedah.
1910	Gray, N. T.	Kuala Lipis, Pahang.
1911	Griffiths, J.	Johore
1897	Haines, Rev. F. W.	Penang.
1886	Hale, A.	England
1907	Hall, G. A.	Singapore.
1911	Hallifax, F. J.	Singapore.
1911	Handy, Dr. J. M.	Singapore.
1895	Hanitsch, Dr. R.	Singapore.
1909	Harrington, A. G.	Singapore.
1904	Haynes, A. S.	Klang, Selangor.
1907	Hays, Dr. T. Heyward	Bangkok, Siam.
1901	Hellier, Maurice	England
1909	Hennings, W. G.	Singapore.
1910	Henry, J.	Singapore.
1911	Hewan, E. D.	England.
1905	Hewitt, John, B.A.	Grahamstown, C. C.
1878	Hill, E. C.	England.
1911	Hood-Begg, A.	Singapore.
1897	Hose, E. S.	Kuala Lumpur.
1878†	Hose, Rt. Rev. Bishop G. F.	England.
1892	Hoynck van Papendrecht, P. C.	Uccle, Brussels, Belgium.
1909	Hubback, T. R.	Pertang, Jelebu.
1909	Hughes, J. W. W.	Kota Bharu, Kelantan.
1907	Humphreys, J. L.	Batu Pahat, Johore.
1903	Izard, Ven. Arch. H. C.	Singapore.
1910	Jackson, Col. H. M.	Kuala Lumpur.
1910	Jaeger, P.	Singapore.
1910	Jamieson, Dr. T. Hill.	Penang.
1907	Janion, E. M.	England.
1912	Jelf, A. S.	Muar.
1910	Johnson, B. J. H.	Singapore.
1911	Johnson, H. S. B.	Baram, Sarawak.
1910	Jones, H. W.	Tapah, Perak.
1912	Jones, W. R.	Batu Gajah, Perak.
1912	Jones, Wyndham	Miri, Sarawak.

1878	Kehding, Dr. F.	Germany.
1909	Keith, Dr. R. D.	Singapore.
1909	Kemp, W. L.	Singapore.
1906	Kinsey, W. E.	Seremban.
1910	Kirk, Dr. J.	Penang.
1901	Kloss, C. B.	Kuala Lumpur.
1884	Knight, Arthur	Singapore.
1905	Knocker, Fred	
1907	Kriekenbeek, J. W.	Taiping, Perak.
1905	Laidlaw, G. M.	Tasik, Upper Perak.
1910	Law, His Honour Sir A.F.G.	England.
1885†	Lawes, Rev. W. G.	New Guinea.
1907	Lawrence, A. E.	Bintulu, Sarawak.
1910	Lemon, A. H.	Seremban.
1892	Lewis, J. E. A., B.A.	Kobe, Japan.
1897	Lim Boon Keng, Dr.	Singapore.
1910	Lloyd, J. T.	Singapore.
1910	Low, H. A.	Penang.
1897	Luering, Rev. Prof. H. L. E., Ph. D.	Frankfurt a. M., Germany.
1911	Lumsden, Major F. W.	Singapore.
1910	Lupton, Harry	Malacca.
1902	Lyons, Rev. E. S.	Philippine Islands.
1909	McArthur, C.	Singapore.
1909	McArthur, M. S. H.	Singapore.
1897	McCausland, C. F.	Batu Gajah, Perak.
1906	MacDougall, Dr. W.	Singapore.
1910	Macfadyen, Eric	Jugra, Selangor.
1908	MacKray, W. H.	Kuala Lumpur.
1911	Maclean, L.	Penang.
1878	Mahomed, Hon. Dato bin Mahbob	Johore.
1905	Makepeace, W.	Singapore.
1908	Main, T. W.	Malacca.
1902	Marriott, H.	Singapore.
1909	Marsh, F. E.	Singapore.
1903	Marshall, F. C.	Bentong, Pahang.
1909	Marshall, Harold B.	Miri-Sarawak.
1900	Mason, J. S.	Kelantan.
1910*	Marriner, J. T.	Kelantan.
1903	Maxwell, Eric	Ipoh, Perak.
1903	Maxwell, W. G.	Kedah.
1909	Mauldon, E. F.	Singapore.
1909	May, C. G.	Penang.
1909	Millard, Dr. A. S.	Klang.
1908	Millard, H.	Singapore.
1910	Miller, Mrs. T. C. B.	Singapore.
1910	Money, A. W. Kyrle	Singapore.
1910	Montgomerie, J. Love	Singapore.
1910	Morant, Geo. C.	Sussex.

1909	Moulton, J. C.	Sarawak.
1911	Munro, R. W.	Jugra.
1909	Nathan, J. E.	Penang.
1910	Niven, W. G.	Glasgow.
1901	Norman, Henry	Kuala Kangsar.
1906	Nunn, B.	Singapore.
1911	O'May, J.	Kuala Kangsar.
1908	Parr, C. W. C.	England.
1910	Paxon, H. C.	Singapore.
1909	Peacock, W.	Singapore.
1899	Pears, Francis	Muar.
1910	Peirce, R.	Singapore.
1911*	Pennington, H. E.	Rembau, N. S.
1878†	Perham, Ven : Archdeacon	England.
1909	Plumpton, M. E.	Singapore.
1907	Pra, C. Da	Kuala Pilah, N. S.
1910	Pratt, E.	Cornwall, England.
1912	Price, William Robert	Chepstow, England.
1906	Pringle, R. D.	Singapore.
1907	Pykett, Rev. G. F.	Penang.
1910*	Reid, Dr. Alfred	Kuantan.
1910	Reid, Alex	Singapore.
1909	Rennie, J. S. M.	Singapore.
1909	Richards, D. S.	Kuala Lumpur.
1911	Richards, R. M.	Province Wellesley.
1890†	Ridley, H. N., C.M.G., F.R.S.	England.
1910*	Ritchie, J. G.	Perak.
1911	Robertson, G. H. M.	Singapore.
1904	Robinson, H. C.	Kuala Lumpur.
1911	Robinson, H.	Singapore.
1897	Rostados, E.	Taiping.
1897*	Rowland, W. R.	Negri Sembilan
1890	St. Clair, W. G.	Singapore.
1909	Sanderson, Mrs. R.	Singapore.
1878†	Sarawak, H. H. Rajah of, G. C. M. G.	Sarawak.
1885†	Satow, Sir E. M.	England.
1897	Saunders, Hon. C. J.	Singapore.
1910	Schudel, G.	Singapore.
1904	Schwabe, E. M.	Kajang, Selangor.
1910	Scott, R.	England.
1907	Scrivenor, J. B.	Batu Gajah, Perak.
1890	Seah Liang Seah	Singapore.
1894	Shellabear, Rev. W. G.	Singapore.
1909	Sims, W. A.	Singapore.
1909	Skinner, Capt. R. McK.	Singapore.
1893†	Smith, Sir C. C., G. C. M. G.	Welwyn, England.
1911	Smith-Steinmetz, G. A.	Klang, Selangor.
1910	Song Ong Siang	Singapore.
1910	Spakler, H.	Singapore.

1912	Staley, Dr. Mildred E.	Malacca.
1909	Steedman, R. S.	Intan, Upper Perak.
1911	Steadman, V.	Singapore.
1910	Stevens, K. A.	Singapore.
1912	Smith, Professor Harrison W.	Cambridge, U. S. A.
1910	Still, A. W.	Singapore.
1911	Stuart, E. A. G.	Kuala Kangsar, Perak.
1910	Sturrock, A. J.	Batu Mengkebang, Kelantan.
1910	Sunner, J. H.	Singapore.
1912	Swayne, C. J.	Sibu, Sarawak.
1908	Tan Cheng Lock	Malacca.
1910	Tan Jiak Kim, Hon.	Singapore.
1905	Tatlock, J. H.	Ipoh.
1911	Taylor, F. E. Worsley	Singapore.
1909	Thunder, M.	England.
1911	Valpy, E.	Singapore.
1888	Van Benningen van Helsdingen, Dr. R.	Singapore.
1878	Walker. Col. R. S. F., C.M.G.	England.
1909	Ward, A. B.	Semanggang, Sarawak.
1897	Watkins, A. J. W., A. T. M.	England.
1910	Watson, Dr. Malcolm	Klang, F. M. S.
1910	Weld, F. J.	Pahang.
1907	Welham, H.	Province Wellesley.
1912	Wharton, S. L.	Singapore.
1910	Whitehead, C. B.	Province Wellesley.
1904	Williams, J. H.	Perak. (?)
1910	Williams, S. G.	Singapore.
1910*	Winkelmann, H.	Singapore.
1904	Winstedt, R. O.	Oxford.
1910	Wolferstan, L. E. P.	Malacca.
1902	Wolff, E. C. H.	Taiping, Perak.
1908*	Wood, E. G.	Kuala Kangsar.
1910	Wyatt, E. W. N.	London, N.
1910	Wymodzeff, A. de	Japan.
1904*	Young, H. S.	Bau, Sarawak.

RULES

OF THE STRAITS BRANCH

OF THE

Royal Asiatic Society.

I. Name and Objects.

1. The name of the Society shall be 'The Straits Branch of the Royal Asiatic Society.'

2. The objects of the Society shall be :—

(*a*) the increase and diffusion of knowledge concerning British Malaya and the neighbouring countries.

(*b*) the publication of a Journal and of works and maps.

(*c*) the formation of a library of books and maps.

II. Membership.

3. Members shall be of two kinds—Ordinary and Honorary.

4. Candidates for ordinary membership shall be proposed and seconded by members and elected by a majority of the Council.

5. Ordinary members shall pay an annual subscription of $5 payable in advance on the first of January in each year. Members shall be allowed to compound for life membership by a payment of $50.

6. On or about the 30th of June in each year the Honorary Treasurer shall prepare and submit to the Council a list of those members whose subscriptions for the current year remain unpaid. Such members shall be deemed to be suspended from membership until their subscriptions have been paid, and in default of payment within two years shall be deemed to have resigned their membership.

No Member shall receive a copy of the Journal or other publications of the Society until his subscription for the current year has been paid.

7. Distinguished persons and persons who have rendered notable service to the Society may on the recommendation of the Council be elected Honorary members by a majority at a General meeting. They shall pay no subscription, and shall enjoy all the privileges of a member except a vote at meetings and eligibility for office.

III. Officers.

8. The officers of the Society shall be :—

A President.
Three Vice Presidents, resident in Singapore, Penang and the Federated Malay States respectively.
An Honorary Secretary.
An Honorary Treasurer.
An Honorary Librarian.
Four Councillors.

These officers shall be elected for one year at the annual General Meeting, and shall hold office until their successors are appointed.

9. Vacancies in the above offices occurring during any year shall be filled by a vote of majority of the remaining officers.

IV. Council.

10. The Council of the Society shall be composed of the officers for the current year, and its duties and powers shall be :—

(*a*) to administer the affairs, property and trusts of the Society

(*b*) to elect ordinary members and to recommend candidates or election as Honorary members of the Society.

(*c*) to obtain and select material for publication in the Journal and to supervise the printing and distribution of the Journal.

(*d*) to authorise the publication of works and maps at the expense of the Society otherwise than in the Journal.

e) to select and purchase books and maps for the Library.

(*f*) to accept or decline donations on behalf of the Society.

(*g*) to present to the Annual General Meeting at the expiration of their term of office a report of the proceedings and condition of the Society.

(*h*) to make and enforce by-laws and regulations for the proper conduct of the affairs of the Society. Every such by-law or regulation shall be published in the Journal.

11. The Council shall meet for the transaction of business once a month and oftener if necessary. Three officers shall form a quorum of the Council.

V. General Meetings.

12. One week's notice of all meetings shall be given and of the subjects to be discussed or dealt with.

13. At all meetings the Chairman shall in the case of an equality of votes be entitled to a casting vote in addition to his own.

14. The Annual General Meeting shall be held in February in each year. Eleven members shall form a quorum.

15. (i) At the Annual General Meeting the Council shall present a Report for the preceding year and the Treasurer shall render an account of the financial condition of the Society. Copies of such Report and account shall be circulated to members with the notice calling the meeting.

(ii) Officers for the current year shall also be chosen.

16. The Council may summon a General Meeting at any time, and shall so summon one upon receipt by the Secretary of a written requisition signed by five ordinary members desiring to submit any specified resolution to such meeting. Seven members shall form a quorum at any such meeting.

17. Visitors may be admitted to any meeting at the discretion of the Chairman, but shall not be allowed to address the meeting except by invitation of the Chairman.

VI. Publications.

18. The Journal shall be published at least twice in each year, and oftener if material is available. It shall contain material approved by the Council. In the first number in each year shall be published the Report of the Council, the account of the financial position of the Society, a list of members, the Rules, and a list of the publications received by the Society during the preceding year.

19. Every member shall be entitled to one copy of the Journal, which shall be sent free by post. Copies may be presented by the Council to other Societies or to distinguished individuals, and the remaining copies shall be sold at such prices as the Council shall from time to time direct.

20. Twenty-four copies of each paper published in the Journal shall be placed at the disposal of the author.

VII. Amendments to Rules.

21. Amendments to these Rules must be proposed in writing to the Council, who shall submit them to a General Meeting duly summoned to consider them. If passed at such General Meeting they shall come into force upon confirmation at a subsequent General Meeting or at an Annual General Meeting.

Royal Asiatic Society.

22, Albemarle Street, W.

1. The Royal Asiatic Society has its headquarters at 22, Albemarle Street, London, W., where it has a large library of books and MSS. relating to Oriental subjects, and holds monthly meetings from November to June (inclusive) at which papers on such subjects are read and discussed.

2. By Rule 105 of this Society all the Members of Branch Societies are entitled while on furlough or otherwise temporarily resident within the limits of Great Britain, and Ireland, to the use of the Library as Non-Resident Members, and to attend the ordinary monthly meetings of this Society. This Society accordingly invites Members of Branch Societies temporarily resident in this country to avail themselves of these facilities and to make their home addresses known to the Secretary so that notice of the meetings may be sent to them.

3. Under Rule 84, the Council of the Society is able to accept contributions to its Journal from Members of Branch Societies, and other persons interested in Oriental research, of original articles, short notes &c., on matters connected with the languages, archaeology, history, beliefs, and customs of any part of Asia.

4. By virtue of the afore-mentioned Rule 105, all Members of Branch Societies are entitled to apply for election to the Society without the formality of nomination. They should apply in writing to the Secretary, stating their names and addresses, and mentioning the Branch Society to which they belong. Election is by the Society upon the recommendation of the Council.

5. The subscription for Non-Resident Members of the Society is 30/-per annum. They receive the quarterly Journal post free.

New and Rare Malayan Plants (Series VI.)

By H. N. Ridley.

This paper is a continuation of the previous series of descriptions of new plants of our region chiefly from the Malay Peninsula, the specimens of which are preserved in the Singapore Gardens Herbarium. Some are plants which have been collected some years ago but not previously described, others have been recently collected by myself in various expeditions, or sent by collectors.

TERNSTROEMIACEAE.

Sarauja (§ *Cauliflores*) *rubens,* n. sp.

A large shrub or small tree about 20 ft. tall glabrous, leaves oblanceolate narrowed gradually to the base and decurrent on the petiole broadest in the upper part, shortly acute, rather thin textured, nerves 14 pairs, dark above, a little paler beneath, margins entire, 9 inches long 4 inches wide, petiole 1½ inch long. Flowers in clusters on the base of the trunk numerous on pedicels 2 inches long. Buds bright rose pink. Calyx lobes ovate orbicular rounded deep rose pink ¼ inch long. Petals ovate orbicular white. Stamens about 20 free from the corolla. Anthers oblong opening by pores. Ovary glabrous, not scaly. Styles 3 united for half their length.

Selangor: Semangkok Pass, at the foot of the hill leading to the Sempang mines.

This belongs to the group of Saraujas which bear the flowers in tufts on the stems and is allied to *S. cauliflora,* Bl. differing in its glabrousness, the bright cherry red sepals and buds, free stamens, and connate styles.

Eurya acuminata var. *monticola.*

Small tree 20-30 feet tall, branches and young leaves silky hairy. Leaves entire coriaceous, apex shortly acuminate quite blunt, base rounded or slightly narrowed, ¾-2 inches long, ½-¾ inches wide, drying greenish above yellowish beneath, above glabrous beneath nerves and midrib hairy. Flowers nearly glabrous, buds ovoid obtuse. Sepals and petals as in type form. Styles connate for ⅔ of their length.

Pahang: Gunong Berembun (No. 13909); Perak: Gunong Kerbau (Aniff) at 6000 ft.

This appears to me to be a mountain form of *E. acuminata,* DeC. The leaves are more coriaceous and quite blunt at the tip, and the branches very hairy. The Gunong Kerbau plant has very small leaves, which occasionally show traces of serration.

TILIACEAE.

Elaeocarpus reticulatus, n. sp.

Branches black. Leaves oblanceolate, apex shortly acuminate, long acuminate at the base, margins thickened bluntly serrate, reticulations conspicuous, coriaceous, 2½ inches long, ¾ inch wide, petiole ¼ inch long. Flowers in short terminal racemes shorter than the leaves nodding. Bracts linear oblong obtuse. Pedicels ¼ inch long silky. Sepals ¼ inch long, 4 linear oblong obtuse silky. Petals 4 oblong truncate shortly laciniate hardly longer than the sepals, silky. Stamens 10, filaments very short. Anthers linear pubescent. Ovary short conic silky. Torus silky short.

Selangor: Ulu Kali Mountain, 3,500 feet (Burn-Murdoch).

Allied to *Elaeocarpus punctata,* King.

AMPELIDEAE.

Pterisanthes pulchra, n. sp.

Stem slender wiry arachnoid. Lower leaves trifoliate, leaflets lanceolate acuminate, lateral ones oblique, central one 2½ inches long, ¾ inch wide, lateral ones smaller, upper leaves simple ovate cordate acuminate 2 inches long, 1¼ inch wide, all deep green bullate above with solitary hairs on the centre of the bullae, midrib hairy, beneath densely covered with ferrugineous elevated masses of hair, margins slightly undulate, nerves 4 pairs in the cordate leaves, petiole half an inch long rufous hairy. Inflorescence opposite the leaves with a slender peduncle 1¼ inch long arachnoid, bearing 2 slender branches, one forming a tendril 3-4 inches long, the other bearing a flattened sinuate spike 5 inches long on a secondary peduncle about the same length all slightly arachnoid hairy. Spike undulate sinuate cut to the rachis about 4 times, ¼ inch wide green, or reddish, rachis hairy. Male flowers not seen. Females scattered globose.

Selangor: Sempang Mines climbing over rocks.

A most charming little climber of which I only found a single plant in flower.

LEGUMINOSAE.

Bauhinia cuprea, n. sp.

Climber with long curled tendrils branches slender red tomentose. Leaves ovate entire or shortly bifid with short blunt lobes a quarter of the length of the leaf, lamina 3 inches long, 2½-3 inches wide, above glabrous beneath red ferruginous with closely appressed silky hairs, nerves 7 elevated on the back rising from the base, petiole 1 inch long swollen at the top subglabrous. Flowers panicled, in a 2 inch panicle, few red, pedicels 2 inches long red pubescent. Calyx tube cylindric narrow half an inch long, lobes pubescent boat-shaped ⅜ inch long equal. Petals broadly ovate rounded, clawed an inch long ½ inch wide, densely covered with appressed red hairs. Stamens 3 very short, filaments red hairy at the base, anthers rounded shortly oblong, not longer than the claw of the petal. Style hairy, fruit not seen.

Perak: Gunong Keledang (Ridley 96901).

This beautiful plant might be *B. Scortechinii* of King of which I have seen no specimen but taking the description, it differs in the flowers being panicled, on long pedicels, the buds ovoid not clove shaped, the longer calyx tube, caducous bracts and clawed petals.

Bauhinia calycina, n. sp.

Climber, young parts covered with red meal. Leaves broadly ovate or almost orbicular bilobed, lobes rounded cut about ⅓ way down, base cordate, glabrous, nerves 10 from the base, 3-5 inches long, 3-5 inches wide, petiole 1½-2 inches. Flowers racemose large white, rachis red mealy. Pedicels 1½ inches long. Bracts lanceolate acuminate red pubescent. Calyx lobe ¼-½ inch long, campanulate lobes 5, linear acuminate acute red woolly 1¼ inch long. Petals little longer linear, glabrous. Stamens 3 thick angled, ¾ inch long, filaments very short, base of anther retuse, all glabrous. Style short pubescent. Pod oblong cuspidate 7 inches long 2 inches wide, stalked above the enlarged calyx tube, 1½ inch long. Seeds four elliptic flat.

Johore: Gunong Pulai; Selangor: Kwala Lumpur and Petaling; Negri Sembilan: Bukit Tanga (Napier), Bukit Kupayiang (Cantley), Seremban (Ridley 10047).

Tendrils long curled, "Akar Kurutop Hitam." Roots boiled for dropsy.

A very remarkable plant from the very long calyx lobes, short petals and very short filaments with long thick anthers. Most nearly allied to *B. Griffithiana,* Prain.

Crudia penduliflora, n. sp.

Tree. Leaves with 4 alternate leaflets, apex not prolonged, leaflets distant elliptic cuspidate rounded at both ends nerves 6 pairs lowest ones smallest glabrous thinly coriaceous drying brown on both sides, 1 to 4 inches long, 1½ inch wide, cusp ½ inch long, petiolule short stout, black wrinkled glabrous, ⅛ inch long. Racemes simple pendulous 12 inches long, flowers small numerous, subdistant nearly sessile, ⅛ inch long. Buds ovoid. Calyx lobes 4 ovate glabrous. Petals 0. Stamens 5, filaments slender, anthers rounded elliptic. Pistil covered with red hairs conic. Style filiform ⅛ inch long.

Malacca: foot of Gunong Mering, Mt. Ophir (Ridley 3004).

This plant differs from any other known to me in its long simple racemes and small flowers. It appears also to have only five stamens. The nerves of the leaves are invisible above, beneath they are seen to interarch well within the margin.

MELASTOMACEAE.

Melastoma mutica, n. sp.

Bush, branches terete covered with short flat processes, and larger ones lanceolate triangular acute and laciniate. Leaves unequal lanceolate acuminate acute base hardly narrowed, above covered with fine appressed pubescence, beneath similar with longer hairs on the nerves; nerves 5, depressed above, elevate beneath, transverse nervules parallel numerous, 3-6 inches long $1\frac{1}{2}$-2 inches wide, petiole half an inch long densely hairy. Flowers few shortly stalked large rose pink. Bracts ovate to lanceolate cuspidate densely hairy with lanceolate acuminate processes, half an inch long and as wide. Calyx tube $\frac{1}{2}$ inch long ovoid densely finely covered with yellowish hairs. Petals cuneate obovate, apex broad rounded truncate, $1\frac{1}{8}$ inch long, $1\frac{7}{8}$ inch wide. Stamens similar filaments as long as the anthers, shorter than the petals, anthers cylindric acuminate base bilobed, not prolonged, wrinkled.

Selangor: Hulu Semangkok (Ridley).

Allied to *M. sylvaticum,* Bl. Remarkable among our species in having the stamens all similar..

Octhocharis sylvestris, n. sp.

Small shrub, stem woody solid, erect 2 feet tall, about $\frac{3}{16}$ inch through glabrous, bark pale. Leaves ovate lanceolate or ovate acuminate glabrous except at the base, on both sides, and nerves two pairs rising from the base 7 inches long, 3 inches wide, petiole 1-2 inches long hairy along the upper edge. Flowers in small axillary fascicles much shorter than the petioles, pedicels very short. Ovary glabrous urn-shaped. Sepals triangular mucronate, rather large spreading. Petals oblong broad. Stamens short 8. Anthers oblong obtuse, all similar, hairs hardly prolonged below, apices distinct divaricate excurved, appendage solitary, conic very short, Capsule $\frac{1}{6}$ inch long globose grooved, crowned with the calyx lobes, dehiscing irregularly.

Malacca: Merlimau (N. Cantley) 9/2/86. Johore: Tanjong Kupang (6504), Mt. Austin (Ridley 12012).

In wet places in woods.

Phyllagathis cordata, n. sp.

Stem hollow hairy. Leaves ovate cordate, abruptly acuminate, margins crenate subdentate, each tooth bearing a long red hair, nerves 9 radiating from the base, transverse nerves prominent beneath above glabrous, beneath with scattered long hairs on the nerves and nervules, 9 inches long 7 inches wide, petiole covered with red hairs stout, 6 inches long. Inflorescence shortly panicled. peduncle nearly 1 foot long, panicle 4-5 inches long, with few short branches at base, above racemose. Flowers about 3 on a branch, all glabrous. Bracts very small lanceolate. Calyx cylindric $\frac{1}{4}$ inch long with 5 short lanceolate teeth. Corolla petals lanceolate. Stamens 5 subequal and similar, anthers subcylindric slightly acuminate muticous. Capsule pale subglobose not narrowed at the base smooth, lobes subovate, valves broad oblong truncate not much longer, $\frac{1}{8}$ inch long and as wide, pedicels elongate to half an inch.

Johore: Gunong Janeng (Kelsall) "Kakapullum." Nearest to *Ph. Griffithii* with very different foliage.

The flowers are unfortunately rather young.

Sonerila nodosa, n.sp.

Stem slender flesh red swollen at the nodes, sprinkled with glandular hairs over 3 inches long. Leaves unequal, or nearly equal lanceolate long acuminate, margins undulate subdentate with minute thorn-like processes, base rounded unequal, nerves 3 from base, secondary nerves from the midrib fine, at a sharp angle texture thin fleshy sprinkled with a few coarse hairs on the upper surface, glabrous on the lower surface, with many raphides bundles, blade $3\frac{1}{2}$ or less long by $\frac{3}{4}$ inch wide, petiole 1 inch long, small leaves $\frac{1}{4}$-$\frac{1}{2}$ inch long petiole as long. Flowers small white in short cymes on the upper axils on pedicels $\frac{1}{4}$ inch long lengthening in fruit. Calyx $\frac{1}{10}$ inch long lobes short acute. Fruit campanulate oblong truncate as broad as long, not ribbed or pustular, minutely punctate $\frac{1}{8}$ inch long, base broad.

Perak: Bujong Malacca (Ridley, Sept. 1898).

Not much resembling any other of our species; peculiar for its nodose stem.

Sonerila Gimlettei, n. sp.

Stem woody 6 inches tall with fibrous roots, $\frac{1}{8}$ inch through smooth. Leaves only at the top, unequal, ovate lanceolate acuminate at both ends sessile, or rather petiole winged to base glabrous except the petiole covered with long red hairs and midrib also hairy, nerves 5 from the base, with about 12 lateral ones 6-8 inches long, 3 inches wide, shorter leaves 4 inches long by 2 wide. Cymes scorpoid many flowered, peduncle hairy, $1\frac{1}{2}$ to 2 inches long. Flowers not seen. Fruit cupular smooth neither ribbed or warty, or with faint traces of warts $\frac{1}{8}$ inch long, stalk as long ribbed.

Kelantan: Kwala Lebir (Dr. Gimlette). Leaves used as a poultice for boils.

Remarkable for its woody stem and large leaves. Allied to *S. biserialis,* Cogn.

Sonerila calophylla, n. sp.

Rhizome tuberous, stem succulent simple or branched 2-8 inches tall glabrous bare below. Leaves crowded in a false rosette at the top, fleshy green or brown marbled with white, glabrous oblong or ovate oblong obtuse base rounded, nerves 4 pairs decurrent on the midrib, secondary nerves few fine, margin with distant short thorn-like processes, 2-3 inches long, 1 inch or less wide, petiole half an inch long. Flowers 3 or 4 crowded in a cyme on a peduncle 1 to 2 inches long, erect. Calyx subcylindric, with very short acute teeth, about $\frac{1}{4}$ inch long. Petals oblong lanceolate, minutely cuspidate $\frac{1}{4}$ inch long rose or white. Stamens 3 little longer than the petals, filaments as long as the anthers. Anthers yellow linear acuminate base bifid, apex acuminate. Style filiform shorter. Capsule funnel-shaped smooth on a thickened stalk, smooth $\frac{1}{4}$ inch long, crowned with the triangular acute sepals.

Kedah: Gunong Jerai (Ridley 5345).

Near *S. Cyclaminella,* Stapf., but much larger.

Medinilla pendens, n. sp.

Epiphytic with pendulous stems 4 or 5 feet long slender, pale, and watered, $\frac{1}{8}$ inch through. Leaves rather fleshy ovate acuminate, tip obtuse, base broad, nerves 3, midrib and two nerves from the base, barely visible 4 inches long $1\frac{1}{4}$ inch wide, petiole $\frac{1}{8}$ inch long very thick. Peduncle stiff $1\frac{1}{4}$ inch long. Flowers $\frac{1}{4}$ inch long, pedicel $\frac{1}{10}$ inch long. Calyx urn-shaped with 5 small teeth. Corolla lobes oblong obovate as long as the corolla obtuse $\frac{1}{8}$ inch long waxy white. Stamens 7, violet glabrous, filaments slender little shorter than the anther. Anther lanceolate acuminate narrow, with 2 short curved processes in front at the base and one on the back. Style short slender.

Johore: pendent from trees overhanging the Panti river at Kota Tinggi.

Allied to *M. Hasseltii* I think, but the long hanging stems and small flowers make it very distinct.

RHIZOPHORACEAE.

Carallia suffruticosa, n. sp.

Shrub, branches slender slightly ribbed glabrous. Leaves elliptic acute at both ends thin, glabrous margin closely set with short processes, nerves 12-13 pairs of primary nerves, intermediates nearly as prominent, under surface of leaves dotted 3-5 inches long $1\frac{1}{2}$-$1\frac{3}{4}$ inch wide, petiole $\frac{1}{2}$ inch. Stipules lanceolate keeled $\frac{1}{4}$ inch long. Flowers in short axillary racemes, shorter than the petiole. Bracts persistent ovate keeled. Calyx $\frac{1}{8}$ inch long campanulate lobes 5 lanceolate coriaceous keeled within acute. Petals linear oblong lacerate fimbriate nearly to the base as long as the sepals. Stamens ten unequal, the longest opposite the sepals, filaments filiform. Anthers elliptic, shorter ones apiculate. Style stout simple. Stigma capitate. Disc 5-lobed.

Selangor: Dusun Tua (7371). Flowers white and yellow.

Very distinct from anything I know, in its shrubby habit short racemes, and fimbriate lacerate petals.

MYRTACEAE.

Decaspermum montanum, n. sp.

A shrub with pale bark. Leaves opposite coriaceous obovate obtuse narrowed at the base, 2 inches long by one inch wide, penninerved, nerves five inconspicuous, midrib prominent beneath, no intramarginal nerve, petiole $\frac{1}{10}$ inch long. Flowers in short axillary racemes about 1 inch long, in the axils of fallen leaves, about 6 in a raceme small white. Bracts linear subulate $\frac{1}{10}$ inch long. Petals $\frac{1}{4}$ inch or less. Flowers unisexual or often so. Males slightly larger than the females. Buds globose. Sepals orbicular ciliate glandular. Petals obovate ciliate, obtuse. Stamens very numerous as long as the petals. Females buds clove-shaped, sepals smaller, petals shorter and rounder. Stamens abortive, filaments very short, anthers rounded. Style moderately stout filiform. Berry $\frac{1}{6}$ inch long, globular five or four ridged, crowned by the persistent calyx lobes, septate with cells containing single seeds. Seeds 4-5 brown reniform with a rounded back, and rather short inner edge.

Kedah Peak: Gunong Jerai (Ridley 5356, 5357, 5209); Mt. Ophir (Ridley 3310), (Hullett 775), (Derry 608).

The Mount Ophir form has often much larger leaves, 3 inches long $1\frac{1}{2}$ inch wide, more strongly veined, and larger racemes than that of Kedah Peak, and might be made a variety, but I obtained a form on Mt. Ophir which exactly resembled the Kedah Peak one.

This plant I refer to the genus *Decaspermum* as it most closely resembles *D. paniculatum* although it has but five seeds. The genera *Myrtus, Decaspermum* and *Rhodamnia* are really very closely allied, the differences in the ovary being but slight.

Eugenia auriculata, n. sp.

A tree, branches stout $\frac{1}{4}$ inch through bark pale. Leaves stiffly coriaceous elliptic obtuse base rounded auricled nearly sessile, glabrous midrib prominent beneath, nerves 12 pairs visible above very inconspicuous beneath interarching into an intramarginal vein, 6 to 9 inches long, 3 inches wide. Flowers fascicled on short stout peduncle from the sides of the branches or terminal white. Calyx tube campanulate narrowed to the base but not pseudo stalked $\frac{3}{8}$ inch long, mouth as broad with 4 short obscure rounded lobes, pustulate, hardly distinct. Petals oblong thick obtuse $\frac{1}{4}$ inch long. Stamens very numerous.

Dindings: Lumut (Ridley 8376).

This species is allied to *E. perakensis,* King, but the nervation of the leaves is quite different, the leaf being thicker and the nerves close and inconspicuous, the calyx also has no pseudo-stalk as in that species.

Eugenia longicauda, n. sp.

Branches rather slender. Leaves lanceolate elongate acuminate narrowed at the base very coriaceous, glabrous above deeply punctate with the nerves hardy visible, beneath reddish brown not punctate, nerves very inconspicuous 8 pairs, with an intramarginal nerve close to the edge, 1-$1\frac{1}{2}$ inch long $\frac{1}{8}$-$\frac{1}{4}$ inch wide, petiole $\frac{1}{8}$ inch long, transversely rugose. Flowers in short few flowered axillary and terminal racemes in the upper part of the branches, peduncle very short $\frac{1}{8}$ inch. Calyx tube $\frac{1}{8}$ inch long campanulate tessellate verrucose, lobes 5 ovate or semicircular rounded. Petals and stamens wanting.

Pahang: Kluang Terbang (Barnes 10869).

Incomplete as the specimens are, this is so curious and distinct a species that I describe as much as I have of it. The small narrow leaves with a very long blunt point are not matched by any other species known to me, and the singular verrucose tessellate calyx tube more like that of a *Pternandra* is very remarkable.

Eugenia johorensis, n. sp.

Tree, branches slender 4 angled. Leavs in rather distant pairs elliptic acuminate obtuse base rounded, coriaceous smooth, nerves above inconspicuous, beneath prominent 8 pairs with secondary nerves nearly as prominent between, intramarginal vein a quarter of an inch from the margin with another close to the margin, midrib beneath prominent. Leaf drying dark brown 4 to 5 inches long 2 inches wide. Petiole stout $\frac{1}{4}$ inch long. Flowers in pairs on a short inch long, terminal raceme 2 inches across. Calyx shortly campanulate rather abruptly narrowed at the base, lobes 4 ovate rounded apex obtuse. Petals coriaceous $\frac{1}{2}$ inch long ovate rounded. Stamens very numerous fine an inch long, anthers very small.

Johore: Gunong Pulai (native collector).

This species is allied to *E. pauciflora* differing in its much larger flowers and distinctly petioled elliptic leaves.

Eugenia Rostadonis, n. sp.

Branches slender terete. Leaves lanceolate acuminate subacute narrowed at the base, thinly coriaceous, above dark when dry below grey, 4-6 inches long, 1 to $1\frac{3}{4}$ inch wide nerves 6-7 pairs depressed above elevated beneath meeting in arches $\frac{1}{8}$ inch from the margin reticulations few, petiole $\frac{1}{4}$ inch long. Flowers few 4 to 5 or less in a terminal cyme. Bracts minute linear persistent $\frac{1}{20}$ inch. Pedicels $\frac{1}{8}$ inch long. Calyx funnel-shaped gradually narrowed into a pseudostalk, half an inch long, lobes four more than half as long as the calyx tube ovate. Flowers $\frac{3}{4}$ inch across. Petals herbaceous with a thinner edge white orbicular nearly $\frac{1}{4}$ inch long. Stamens half an inch long with very small anthers.

Tringanu at Bundi (Coll. Rostado).

Perhaps nearest to *E. plumbea,* King. The leaves are in rather distant pairs, dark and smooth above, and light smooth grey beneath.

Eugenia porphyrantha, n. sp.

A tree with slender terete branches. Leaves lanceolate acuminate subcoriaceous base rounded cordate 6 inches long 2 inches wide, nerves sunk above, prominent beneath 16 pairs subhorizontal meeting in an inarching intramarginal vein $\frac{1}{8}$ inch from the margin, petiole thick $\frac{1}{8}$ inch long or less. Leaf when dry dark blackish brown. Flowers 2 or 3 on a very short terminal raceme, $\frac{1}{4}$ inch long. Calyx half an inch long obconic narrowed to a pseudostalk lobes 4 very short indistinct rounded. Petals ovate broad-based, longer. Stamens under half an inch long densely crowded purple.

Selangor on Bukit Kutu (Ridley 7313).

The lanceolate cordate leaves and few purple flowers are peculiar.

Eugenia nemoricola, n. sp.

A small tree, branches terete slender. Leaves narrow lanceolate acuminate 11 inches to 12 long, $2\frac{1}{2}$ to 3 inches wide, base rounded cordate nearly sessile thinly coriaceous, primary nerves 7 to 15 pairs sunk above, prominent beneath, remote interarched into an intramarginal nerve $\frac{1}{8}$ inch from the edge, drying light brown above yellowish brown beneath. Flowers solitary or few terminal. Calyx tube broadly campanulate rather abruptly narrowed smooth with short rounded lobes.

Penang: Richmond pool (Ridley).

The specimens are somewhat imperfect. It is allied to *E. cauliflora,* Ridl., but the flowers are terminal, and the venation very different, the nerves being much fewer.

Eugenia oreophila, n. sp.

A shrub, branches rather thick, grey angled. Leaves crowded towards the ends of the branches obovate or elliptic obovate obtuse, apex usually rounded coriaceous, $1\frac{1}{4}$ inch long, 1 inch wide, light olivaceous when dry shining, margins recurved, nerves 9 pairs reaching to the intramarginal inarchings, secondary nerves numerous reticulate, all elevate on both sides, petiole $\frac{1}{8}$ inch long. Flowers few in short terminal cymes, the whole inflorescence an inch long. Pedicels short and thick. Calyx tube clove-shaped gradually narrowed to the base. Lobes orbicular ovate 4, distinct half as long as the tube, $\frac{1}{8}$ inch long. Petals larger than calyx lobes orbicular white. Stamens very numerous $\frac{1}{4}$ inch long.

Selangor: Ulu Semangkok (F. Dennys) "Kelat Bukit."

A distinct plant in its rounded reticulate leaves and rather large flowers for its size.

Planchonia grandis, n. sp.

A big tree 80 feet tall or more, and six feet in girth at the base. Bark brown vertically grooved. Branches reddish brown. Leaves very coriaceous dark green obovate oblong shortly acuminate, blunt narrowed at the base margins entire, nerves prominent 15 pairs, 6 to 7 inches long $3\frac{1}{4}$ inch wide, (drying black, shining above), petiole $\frac{1}{2}$ inch long. Flowers numerous in a short dense spike sessile, terminal. Calyx tube obconic not ribbed $\frac{1}{4}$ inch long green, lobes orbicular ovate rounded at the tip $\frac{1}{4}$ inch long. Petals orbicular $\frac{3}{4}$ inch long green, much shorter than the stamens. Stamens very numerous, 2 inches long forming a whorl 4 inches across, white, base crimson, anthers small oblong yellow. Style slender white 1½ inch long. Fruit oblong globose green, inside white, 3 inches long, 2 inches across, crowned with the sepals. Seeds 3 or more brown half an inch long. Embryo convolute with a long radicle.

Singapore: Botanic Gardens Jungle (6243 of my collections). This fine tree differs from *Pl. sundaica,* Miq. in its entire leaves, oblong in shape, larger stamens and shorter petals.

The fruit is apple-shaped and has a peculiar turpentine-like odour.

CORNACEAE.

Alangium Tutela, n. sp.

A small sized tree. Leaves elliptic to lanceolate cuspidate base cuneate alternate glabrous, thinly coriaceous drying grey, nerves hardly conspicuous above strongly elevate beneath 7 to 8 pairs, transverse nervules and reticulations distinct, 4 to 6 inches long, 2 to 2½ inches wide, petiole half an inch long, stout strongly transversely rugose. Flowers in short axillary cymes of four or five flowers, peduncle very short ⅛ inch long, pedicels as long. Bracts caducous minute ovate acuminate. Calyx tube ⅛ inch long narrowed towards the base ribbed, limb saucer-shaped entire short. Petals linear oblong 5 recurved white, mealy outside half an inch long. Stamens nearly as long as the petals 6 linear pubescent. Style shorter clubbed.

Singapore: Ponggol (Ridley 5082).

This is the genuine "Kayu Tas" the properties of which according to the Malays are such that tigers will flee from any one carrying a piece of its wood. Sticks of the tree are often sold for this purpose and Malays travelling in the forests often wear a small piece of the wood on a chain as a protection.

The tree appears to be rare, and I am not sure that the Singapore plant has not been introduced from elsewhere.

The short few flowered cymes and small leaves distinguish it from any other species known to me.

CAPRIFOLIACEAE.

Viburnum villosum, n. sp.

A shrub, the branches covered with thick yellow hairs. Leaves opposite elliptic to lanceolate thinly coriaceous base rounded, apex acuminate, above glabrous, or in young leaves with yellow hairs on the midrib, beneath cinnamon coloured with yellow hairs softly villous, 5-6 inches long 2½-3 inches wide nerves 4-6 pairs petiole villous, becoming at length glabrescent ¾ inch long. Inflorescence umbellate, terminal cymose 1½-2 inches long villous, peduncles rather stout ¾ inch long, branches short. Flowers small sessile green. Calyx tube cylindric hairy, lobes ovate acute. Corolla tube short

$\frac{1}{10}$ inch long glabrous cylindric thick lobes rounded ovate, as long as the tube 5. Stamens twice as long as the corolla 5. Anthers oblong, filaments thick. Style cylindric obtuse glabrous longer than the calyx lobes. Fruit not seen.

Selangor: on Bukit Kutu at 3000 feet altitude (Ridley 7597), May 1890.

Very distinct in its hairiness.

RUBIACEAE.

Argostemma reptans, n. sp.

A dwarf plant 2 to 3 inches tall with a slender creeping rhizome emitting stems at intervals and often forming small tufts in cracks in rock. Stems slender corky. Leaves unequal, larger ones lanceolate subrhomboid equally narrowed to both ends subcoriaceous, margins crenulate with short teeth on each crenulation quite glabrous, above grey when dry with the midrib prominent, and the nerves usually invisible, beneath similar but brown, $\frac{1}{2}$-$\frac{3}{4}$ inch long, $\frac{1}{4}$ inch wide or less, petiole short $\frac{1}{10}$ inch long; smaller leaf narrow linear lanceolate $\frac{1}{8}$ inch long resembling the stipules, entire. Flower solitary terminal on a peduncle $\frac{3}{4}$ inch long with two very small linear, lanceolate bracts half way up. Sepals lanceolate acuminate $\frac{1}{10}$ inch long. Corolla white $\frac{3}{4}$ inch across, tube very short lobes lanceolate acute $\frac{1}{8}$ inch across. Stamens in an acuminate cone nearly as long. Fruit not seen.

Kedah: on Gunong Jerai on rocks in the stream near the top alt. 3000 feet, June 1893.

I do not know any species much resembling this pretty little plant, the corky transversely wrinkled stem, and the peculiar leaves make it very distinct. In some the nerves are quite invisible, in others four pairs can be seen, the margin is also sometimes more serrate or dentate than crenulate and in one or two leaves I find two or 3 setæ on the upper midrib.

Argostemma johorense, n. sp.

Stem elongate ascending rooting for a long way with slender wiry roots 18 inches long, leafy ascending portion 6 to 10 inches long covered with appressed hairs. Leaves unequal in distant pairs, largest elliptic to lanceolate acuminate, or cuneate, base litte narrowed inequilateral, membranous, above glabrous, nerves 6-7 pairs often invisible, usually conspicuous, beneath similar not glaucous, but midrib covered with appressed hairs, 2 to 4 inches long, $\frac{3}{4}$-$1\frac{1}{4}$ inch wide, petiole $\frac{1}{10}$-$\frac{1}{8}$ inch long, small leaf ovate cordate acuminate or rounded at the tip $\frac{1}{4}$ inch long or less glabrous or edge ciliate. Stipules oblong ovate, as long as the small leaf. Cyme compound of three branches on a peduncle 1 inch long terminal or on a side branch. Branchlets 1 inch or less with about 5 flowers on each, bracts 2 or 3 lanceolate acute, $\frac{1}{10}$ inch long. Pedicels $\frac{1}{4}$ inch long glabrous. Sepals ovate acute closely pubescent hairy. Corolla half an inch across tube very short, lobes very narrow lanceolate linear acuminate ⅒ inch across at the base white. Stamens in a fairly stout acuminate cone as long as the petals. Fruit shortly cupular ⅛ inch long densely hairy.

Johore: Tempayan river (Ridley 13270), Sungei Tebrau (13207), Mt. Austin; Serom near Batu Pahat. In low wet forest.

Apparently confined to South Johore. Distinct in its long stem with elongate internodes, often an inch long, narrow corolla lobes and hairy capsule.

A. johorense var. *Kelsalli.*

Stems shorter and leaves more crowded, hairy. Leaves lanceolate subacute base rounded marginal above glabrous nerves visible 7 pairs, 2½ inches long, 1¼ inch wide, beneath paler nerves elevated covered with spreading hairs, and scattered hairs between, small leaves orbicular, glabrous, petiole ⅛ inch long hairy. Cymes few flowered. Calyx as in type. Corolla lobes slightly broader and shorter. Fruit as in type.

Selangor: Bukit Hitam (Kelsall).

I hardly care to distinguish this specifically though it differs in its hairiness and pale underside of leaf. The hairs are rather coarse thick trichomes thickened at the base and narrowed upwards.

Argostemma denticulatum, n. sp.

The whole plant twelve inches tall, stem succulent, with internodes one inch long. Leaves fleshy lanceolate acuminate narrowed at the base, margins minutely denticulate towards the tip, paler beneath glabrous except for a few scurfy hairs on the midrib beneath, 3 to 4½ inches long, half to one inch wide, opposite leaf very small oblong ovate ⅒ inch long, caducous, petiole a quarter of an inch long, with several linear bracts at the base, and also at the base of the cyme, ⅒ inch long. Flowers about 9 in a compound cyme; pedicels ¼ inch long. Calyx lobes ovate lanceolate acuminate, ⅒ inch long. Corolla lobes reflexed triangular acute ⅛ inch long white. Staminal cone ¼ inch long rather abruptly acuminate.

Selangor: Ginting Sempah, 3990 feet alt. In thick forest.

This species is allied to *A. lanceolatum,* Ridl., but is quite glabrous, the margins of the leaves minutely denticulate, the opposing leaf smaller, and the flowers fewer and smaller.

Argostemma Klossii, n. sp.

A dwarf plant 4-5 inches tall, stem hairy, internodes short. Leaves unequal, larger one elliptic lanceolate acute or subacute base rounded inæquilateral above glabrous or sprinkled with hairs, back white nerves hairy, and hairs sprinkled over it, 2 inches long ½ inch wide, petiole ⅒ inch long, hairy, small leaf ovate cordate ⅛ inch long. Stipules orbicular rounded, wider but shorter. Peduncle 1 inch long hairy with a whorl of 4 ovate bracts in the centre. Cyme bracts narrow lanceolate. Flowers 4 or 5 in a simple or branched cyme. pedicels $\frac{1}{8}$ inch long hairy. Calyx cupular with lanceate obtuse hairy lobes. Corolla $\frac{1}{4}$ inch across, lobes narrow lanceolate. Cone of stamens as long thick, shortly acuminate. Fruit cupular hairy.

Johore: Ulu Sayong (Kloss); Negri Sembilan: Bukit Sulu (N. Cantley). "Sumpu Kring."

Allied to *A. johorensis* but much smaller.

The leaves in the Negri Sembilan plant are broader and rounded at the tip.

Argostemma enerve, n. sp.

Stem creeping ascending 5 to 8 inches glabrous. Leaves unequal. large one ovate lanceolate base rounded or slightly narrowed aequilateral at base. glabrous fleshy beneath glaucous nerves invisible on both surfaces margin thickened $2\frac{1}{2}$ inches long by 1 inch wide. petiole $\frac{1}{4}$ inch long. small leaf ovate cordate acute $\frac{1}{8}$ inch long. Stipules orbicular obtuse. Cyme solitary terminal 2-4 flowered on a peduncle an inch long glabrous with a circle of small bracts about half way up. Bracts lanceolate obtuse. Pedicels in flower $\frac{1}{4}$ inch long. in fruit nearly 1 inch long. white hairy. Calyx campanulate hairy, with short triangular teeth. Corolla white half an inch across lobes lanceolate acute $\frac{1}{10}$ inch across. Stamen cone as long narrow long acuminate curved. Capsule $\frac{1}{5}$ inch long. campanulate densely appressed hairy.

Negri Sembilan: Gunong Angsi (Feb. 1904) Ridley.

Resembles *A. johorensis* and is allied to it. differing in its aequilateral leaves which are thicker. the nerves being quite invisible, the underside white. and its longer and more slender cone of stamens. In the fruit, form of stipules and smaller leaves it closely resembles *A. johorensis.*

Argostemma Havilandii, n. sp.

Stem as thick as a crow quill densely covered with corky reticulations and transverse bars often elevated into flat discs. Leaves distinct very unequal, largest lanceolate acuminate base cuneate, above smooth nerves invisible drying black, beneath glaucous with 8 pairs of nerves inarching within the margin $2\frac{1}{2}$-3 inches long $\frac{3}{4}$ inch wide. petiole $\frac{1}{8}$ inch long. small leaf linear or lanceolate linear $\frac{1}{8}$ inch long. Stipules broader lanceolate obtuse. Peduncle 1 inch long slender sparingly pubescent. Flowers small white umbellate on slender hairy pedicels $\frac{1}{4}$ inch long. with short linear bracts at the base. Calyx tube short lobes ovate obtuse hairy. Corolla in bud ovoid obtuse lobes ovate lanceolate obtuse $\frac{1}{10}$ inch long. Stamen column short ovoid. anthers lanceolate broad blunt with curved linear appendages.

Sarawak: Kuching (Haviland, 2958).

Very curious in the stem which has fawn colored elevated ridges with transverse bars of a corky nature which are often developed into flattened irregular discs. The small flowers with short petals and stamens are also peculiar, *Argostemma salicifolium,* n. sp.

Stems to peduncle 8 inches rarely branched, erect hardly creeping at base as thick as a crow quill glabrous below hairy above, nodes close. Leaves lanceolate long acuminate very narrow 6 inches long $\frac{3}{8}$ inch wide base shortly cuneate, nerves 20 pairs hardly or not visible above, above smooth glabrous keel elevated, beneath pale when alive, midrib hairy; small leaves ovate cordate $\frac{1}{10}$ inch long. Stipules oblong obtuse longer and narrower than the small leaf. Cyme compound much shorter than the leaf, peduncle slender half an inch, glabrous with a whorl of bracts at the base of the branches, two bracts linear or lanceolate linear very narrow two ovate obtuse. Cyme branches 2 or 3 very slender glabrous, with three small white flowers on pedicels $\frac{1}{4}$ inch long. Calyx short globose campanulate, lobes ovate acuminate glabrous. Corolla lobes broad lanceolate $\frac{1}{8}$ inch long, white. Stamens lanceolate in a thick acute cone about as long as the petals hardly appendaged. Fruit $\frac{1}{8}$ inch long globose campanulate glabrous.

Borneo: Sarawak on Matang (Hullett, Ridley 11751).

A very distinct plant with the habit of *A. Curtisii,* King.

OPHIORRHIZA.

This genus of herbs occasionally slightly woody is undoubtedly a difficult one, as the species seem to run into each other and requires careful working up from a large series of East Indian specimens. They are very abundant and conspicuous all over the Malay Peninsula in deep forest, or on forest rocks. A large number have been described from India and the Malay islands, and ten from the Malay Peninsula in the Materials. Most of these latter are tolerably distinct but I have not seen *O. fasciculata,* Don. or types of *O. Kunstleri,* King.

O. Mungos, L. the type of the genus, is described by King as occurring in all the provinces common and variable in size and pubescence. The type was described from Ceylon, and I have a plant collected there by myself, in fruit, which is undoubtedly *O. Mungos,* but I have not seen anything actually like this or agreeing with the description of the type in the Peninsula.

O. discolor, Br. Wall. Cat. 6232*a* is readily identified alive at least by its deep brown leaves.

O. erubescens, Wall. 6233, is based on a plant from Ava, without flowers, and King describes it from Perak. What I take to be his plant is one of the biggest in the Peninsula, but if I am correct in my identifications the leaves are by no means always glabrous, the nerves being minutely mealy pubescent in many plants. The flowers are commonly pink, but occasionally white. I include under this the following specimens.

Selangor: Kwala Lumpur (Curtis), Batu Caves (8238, 8585), Ginting Peras (7403); Perak: Lenggong (14477), leaves glabrous, flowers pink, fruit large; Pahang: Kota Glanggi (flowers white);

Tronoh (Machado), Tampin (Goodenough); Dindings: Lumut (10278).

Allied to this is *O. costata* described below which is a large plant like full size *O. erubescens* but has a dilated strongly ribbed calyx.

A plant distributed under the name *O. erubescens,* Wall. by King collected at Gopeng by Kunstler No. 5853 of his herbarium and quoted by King as that species in the Materials, has velvety leaves hairy on the edge, and cannot be classed with *O. erubescens,* nor does it resemble any other plant I have seen.

Ophiorrhiza fruticulosa, n. sp.

A slender branch shrublet, leaves caducous below, leaving bare stems, branches flexuous, dark, nodes dilated $\frac{1}{4}$-$\frac{1}{2}$ inch apart. Leaves equal lanceolate acuminate base cuneate minutely pubescent with very short scattered hairs above, longer and more abundant on the edge, dark above, when dry pale olivaceous glabrous beneath, $1\frac{1}{2}$-$2\frac{1}{2}$ inches long 1-$1\frac{1}{2}$ inches wide, petiole $\frac{1}{4}$-$\frac{1}{2}$ inch long slender. Stipules very small ovate rounded soon caducous. Peduncle slender pubescent half an inch long. Branches of inflorescence as long in fruit, pubescent. Flowers $\frac{1}{8}$ inch long on pedicels of the same length. Calyx short semiglobose with short ovate lobes. Corolla tube narrow, 3 times as long lobes lanceolate reflexed. Stamens exsert 5 linear cylindric truncate. Style slender exsert. Fruit subreniform oblong upper margin nearly straight hardly indented, quite glabrous $\frac{1}{8}$ inch wide, $\frac{1}{12}$ inch deep.

Selangor on the top of the limestone cliffs at the Batu Caves (Ridley 8287, 8583), fl. July, December.

A very distinct species in its slender branching woody habit, small flowers and exsert stamens.

Ophiorrhiza costata, n. sp.

A large herb over a foot tall, stem succulent pubescent. Leaves usually equal ovate acuminate base cuneate, 6-8 inches long, $2\frac{1}{2}$-$3\frac{1}{2}$ inches wide, glabrous when adult, nerves 9 pairs dark above paler beneath, petiole an inch long. Stipules linear acuminate $\frac{1}{4}$ inch long. Cyme pubescent peduncle 1 inch long. Branches few about 2 inches long. Bracts none. Pedicels as long as the calyx pubescent. Calyx enlarged subglobose strongly ribbed pubescent, lobes short acute. Corolla stout cylindric pubescent $\frac{1}{4}$ inch long, pink, lobes reflexed short and broad. Stamens not extruded except the tips. Fruit $\frac{1}{4}$ inch across scabrid, transversely oblong reniform, upper margin indented.

Pahang: Telom (13644), Gunong Berembun at 6300 feet; Selangor: Bukit Hitam (Kelsall 1908) and near the Semangkok Pass (8584 Ridley).

Distinct in its widely dilated ribbed calyx, I took this at first for a form of *O. erubescens* but it is very distinct, I find. A plant in young flower I got on Gunong Angsi in Negri Sembilan differs in its much more hairy leaves and stems. The leaves have also more nerves.

Ophiorrhiza tenue, n. sp.

Weak herb 4-8 inches tall not or little branched, stem succulent slender hairy. Leaves equal or unequal, ovate thin base broad slightly cuneate subobtuse or acute, sparingly hairy on the upper surface or glabrous, glabrous except the nerves beneath, 2-4 inches long 1 to 1⅛ inch wide, nerves 5 pairs or more fine, petiole slender half an inch long pubescent. Stipules reduced to a ridge. Cymes very small ½ inch long, few flowered, peduncle puberulous very short. Flowers ⅛ inch long. Bracts absent. Calyx dilated small with short lanceolate teeth, pubescent. Corolla white dilated upwards, lobes nearly as long reflexed, tube with hair in the mouth. Stamens extruded filaments filiform extruded, anthers cylindric truncate. Capsule short linear oblong transversely edge indented ⅛ inch across.

Perak: Telor Pinang (No. 9767) and Tambun; Selangor: Dusun Tua (May 20).

A very odd little species with very few small flowers, of a very different shape from most species, almost urn-shaped. The stamens protruded further than any species I know of.

Ophiorrhiza communis, n. sp.

Herbaceous usually not or little branched or in strong plants more branched and occasionally creeping. Stem pubescent or hairy. Leaves ovate or more often lanceolate acuminate at both ends, equal, above dark beneath red or drying yellowish, glabrescent, with sprinkled hairs above, beneath the midrib and nerves mealy pubescent, and occasionally the whole surface beneath puberulous, 4-6 inches long 1-1½ inch wide, petiole 1 inch long. Stipules setaceous. Peduncle 1 inch long or more. Cyme branches slender often eventually spreading over an inch long, flowers conspicuously secund, white, cyme branches and flowers glabrous or somewhat pubescent. Pedicel short as long as the calyx. Calyx ovoid, lobes short blunt. Corolla tubular, lobes short. Stamens not exsert. Fruit transversely oblong ¼ inch across short, upper margin straight, cells somewhat swollen usually puberulous.

Malacca: Bukit Tampin (Goodenough 1860); Selangor: Rawang (7404), Ginting Bidai 7402, 7407, (var. with pink flowers); Petaling: Sempang (12075), Semangkok Pass (8580), Klang Gates (13413); Sungei Ujong: Bukit Sulu (Cantley); Dindings: Pangkor (8345); Perak: Larut Hills to the top; Telok Pinang (9765); Pahang: Telom (13642), Kwala Lipis (Machado 11577); Kedah: Yan; Borneo: Kuching on Matang.

Common all over the woods of the Peninsula except Singapore and Johore where it is replaced by the allied *O. singapurensis,* from which it is distinguished readily by the much less hairy leaves. It is more inclined to creep than that species.

A robust form with large leaves 6 inches long and 2 inches across, occurs on Gunong Mering, Mt. Ophir (3209).

An elongate lanceolate narrow leaved form is from Gunong Tungul, Dindings (7194), and a small compact form with rather more coriaceous leaves was collected at Kwala Teku near Gunong Tahan by Robinson (No. 5534).

I think it probable that this is what Sir George King refers to as *Ophiorrhiza Mungos* of the Peninsula. It is obviously different from the *O. Mungos* of Ceylon the type of the species.

Ophiorrhiza singapurensis, n. sp.

Herb a foot tall, litttle or not branched, stem succulent hairy glabrescent below. Leaves oblong lanceolate, acuminate obtuse, narrowed at the base hairy on both surfaces especially densely on the nerves beneath, light green above pale beneath, drying back brown above and red beneath, 5-6 inches long 1½-2 inches wide, petiole hairy 1 inch long. Stipules setaceous hairy. Cyme hairy peduncle half an inch long, branches as long. Flowers white, shortly pedicelled. Calyx short subcylindric slightly dilate, lobes lanceolate. Corolla tube ¼ inch long, lobes very short oblong all hairy outside. Fruit hairy ¼ inch across broadly V shaped, upper margin rather deeply indented, about half as long as wide.

Singapore: Bukit Timah (6899), (Hullett 335), 2855, Pulau Damar, Pulau Ubin (Hullett 424), Jurong 10763; Johore: Gunong Pulai (Ridley 12204), Gunong Panti (R. 4172), Sungei Tebrau (13221); Negri Sembilan: Bukit Sulu (Cantley); Dindings: Lumut (Ridley 7195); Lingga Island (Hullett).

This species appears to be confined almost entirely to the South of the Peninsula, and is abundant in Singapore and Johore, the only species in the island. It does not appear to have been collected by Wallich, nor it is taken up in the Materials. It is the hairiest species of our region except *O. tomentosa,* Jack.

Ophiorrhiza Kingiana, n. sp.

Stem unbranched rather woody 6 to 15 inches tall, velvety hairy above. Leaves ovate to oblanceolate shortly acute at the tip narrowed at the base 2-inches long, one inch wide, nerves 8 pairs, above scabrid with minute raised dots, beneath very shortly velvety, of the same colour on both sides, margins fringed with hairs, petiole ¼ inch long scabridly velvety. Peduncles axillary and terminal in flower ¼ in fruit 1 inch long velvety, branches few short. Flowers small white ⅛ inch long glabrous. Calyx minute campanulate with short points. Corolla tubular lobes short not reflexed, white. Fruit ⅛ inch across, oblong rather deeply emarginate glabrous, somewhat resembling that of *O. erubescens.*

Perak: Dense jungle rock soil near limestone 300 to 500 feet, Gopeng, April 1884 (King's collector 5853).

Most nearly allied to *O. tomentosa* but much less hairy, and with fruit longer and narrower, and glabrous.

Ophiorrhiza nervosa, n. sp.

A stout herb with a hairy stem over a foot tall. Leaves ovate acuminate base broad abruptly cuneate to the petiole above glabrous scabrid hairy beneath, the midrib and nerves brown hairy 4-6 inches long 3 inches wide, nerves 15 pairs, branched at near the tip the branch inarching into the next nerve, petiole brown hairy half an inch long. Stipules setaceous. Peduncle 2 inches long hairy. Cyme branches 1½ inch long. Flowers shortly pedicelled. Calyx cupular ribbed lobes blunt, all hairy as long as the pedicel $\frac{1}{16}$ inch. Corolla glabrous $\frac{1}{6}$ inch long, lobes short oblong.

Selangor: Semangkok Pass, (Pahang track) (Machado) May 1893.

A single specimen without fruit, appears quite distinct from its closely nerved rather thick leaves and rough scabrid surface beneath. The leaves are rather fleshy and dry black or nearly so.

Mussaenda purpurascens, n. sp.

Sarmentose with dark colored branches thickly covered with purple hairs. Leaves elliptic acuminate broad based 4 inches long and 2 inches wide, subcoriaceous, above glabrescent except the midrib, densely purple hairy, beneath paler, nerves 10 pairs and midrib and secondary nerves densely purple hairy, petiole very short ⅛ inch long hairy. Compound cymes terminal on the braches very many flowered 2 inches across entirely hairy. Bracts linear. Flowers nearly sessile. Calyx cylindric urn-shaped with short acute points, hairy, enlarged lobe oblanceolate, much narrowed to the base on a hairy stalk 1¼ inch long, apex rounded blade white hairy on the nerves, 2½ inches long 1 inch wide. Corolla tube an inch long, ¾ slender cylindric, upper quarter urn-shaped ⅛ inch through, lobes short broadly ovate acute all hairy except the inner face of the lobes. Anthers shortly projecting slightly hairy.

Selangor: Sempang Mines track, Semangkok Pass. Perhaps nearest to *M. macrophylla,* Wall. but with much longer corolla and with rounded bases to the leaves.

Urophyllum coriaceum, n. sp.

Shrub, stems white and corky. Leaves in rather distant pairs lanceolate acuminate with a long point, narrowed slightly at the base or rounded coriaceous above smooth and glossy nerves invisible or depressed beneath cinnamon brown when dry, nerves 9-10 pairs elevated, 5 inches long 1¾ inch wide, petiole black ½-¾ inch. Stipules caducous. Flowers few in short axillary cymes, with short peduncle and pedicels pubescent. Calyx cupular with a broad base margin truncate with only obscure traces of teeth. Corolla ⅛ inch, rather coriaceous, lobes 5, lanceolate acute, hooded, tube short. Anthers oblong surrounded by a tuft of long hairs. Fruit obovoid, crowned with the limb of the calyx tube.

Malacca: Mt. Ophir (Ridley 10105) at an altitude of about 1000 ft.

Distinct in its white stems and coriaceous leaves and stiff petals.

Urophyllum lasiocarpum, n. sp.

Shrub, stem densely appressed hairy. Leaves oblong or elliptic acuminate with a long point, base rounded, above glabrescent except the midrib appressed hairy, beneath densely hairy with brown hairs especially long on the midrib and veins 4-6 inches long 1-1¾ inch wide, petiole ⅛-¼ inch long densely hairy. Stipules caducous linear acuminate hairy. Cymes sessile about as long as the petiole in fruit. Flowers not seen, fruit very shortly pedicelled ¼ inch long turbinate globose densely hairy. Calyx tube entire truncate covered with long hairs. Seed very numerous small ovoid deeply reticulate dark brown.

Perak: Bujong Malacca (Ridley 9726) Sept. 1898.

Though I have not seen flowers of this species it is so distinct that I do not scruple to describe it. The very hairy leaves, and short petioles, and fruit covered with long hairs distinguish it from any species known to me.

Canthium velutinum, n. sp.

A shrub, covered with soft velvety hairs, brown when dry. Leaves lanceolate acuminate sessile with an acute apex and rounded base 4 inches long, 1½ inch wide densely hairy on both surfaces, nerves invisible above prominent beneath, 5 pairs ascending. Stipules small lanceolate densely hairy. Flowers bright green in axillary tufts, pedicels ¼ inch long hairy. Calyx goblet-shaped, limb very short truncate ⅛ inch long. Corolla half an inch long tubular with 4 narrow lanceolate lobes, less than half as long valvate densely hairy outside, inside glabrous except for a tuft of hairs on each lobe above the tube, and a circle of hairs within at the base. Stamens connate into a cone round the stigma. Anthers linear acute, filaments short linear attached to the mouth of the tube glabrous. Style longer than the tube, stigma large oblong bifid at the tip, points recurved. Disc elevated. Fruit pyriform ribbed half an inch long densely velvety, pendulous. Pericarp thin woody 2 celled, 1 cell empty the other containing one seed.

Perak: Gunong Keledang (Ridley 9719).

A very distinct species in its large velvety flowers and pear-shaped fruit but most nearly allied to *C. pauciflorum,* King.

Coffea malayana, n. sp.

A shrub or small tree 10 to 15 feet tall, branches yellowish when dry, 4 angled. Leaves coriaceous elliptic acuminate, base acuminate 7-8 inches long 2½-3 inches wide, nerves 13 pairs meeting on intramarginal loops, drying dark shining above, cinnamon brown beneath, petiole ½ inch long. Stipule yellowish cartilagineous shining connate into a tube with a lanceolate point ¼ inch long. Flowers in crowded clusters in the axils sessile 14 or more together.

Calyx short cup-shaped, edge entire. Corolla 1 inch long white, tube slender, lobes narrow linear 5; ¼ inch long. Stamens 5, anthers linear apiculate filaments short, all included in the tube and adnate to it above ⅓ of the distance from the mouth. Styles very slender, stigma clubbed. Fruit small globose or elliptic one-seeded, Seed globose bony.

Johore: Gunong Panti (Ridley 4177); Selangor: Bukit Hitam (Ridley 7413), Kwala Lumpur (10217); Negri Sembilan: Gunong Berembun (Cantley) and Bukit Kandang; Malacca: Bukit Tampin (Goodenough 1864).

This plant is described by Cantley as 10 to 15 feet tall, the wood used in house building, and fencing, of a reddish colour and sinking in water. He gives the names of Chiapet, and Kambang Semangkok Jantan for it and Goodenough found it called Gading Jantan in Tampin. (Gading is a common name for the small tree *Rubiaceae* such as *Diplospora*). The tree appears to be a true Coffee and has curiously been overlooked in the Material for a flora of the Malay Peninsula, and one specimen (No. 10217) has been referred to by King to *Lasianthus coriaceus* which it slightly resembles in leaf, but the venation is quite different, the inarching nerves being very conspicuous. I have seen very few ripe fruit but all I have seen are one seeded, the seed very hard and globose, with the embryo at the base.

This is a new genus to the Peninsula flora but as the Coffees occur both in India and Java, it is not unexpected. Its crowded flowers, narrow linear petals and one seeded fruit distinguish it from all others of this region.

Becheria n. gen.

A small branched shrub, with thin large leaves elliptic cuspidate. Stipules ovate triangular. Inflorescence terminal compound cymose. Flowers small white. Bracts lanceolate to orbicular. Calyx lobes 4 orbicular enlarging after the fall of the corolla and becoming oblong obtuse. Corolla tube very short glabrous without and within lobes valvate 4, ovate shorter than the tube. Anthers subsessile linear acuminate 4 in the mouth of the tube. Style shorter clubbed entire. Fruit globose crowned with the enlarged sepals woody, 2 celled, 2 ovuled.

Species 1, Malay Peninsula.

B. parviflora, n. sp.

A small shrub with pale bark and the habit of *Adenosacme*. Leaves elliptic cuspidate base shortly cuneate, glabrous, midrib depressed above, elevate beneath, nerves slender 12 or 13 pairs elevate beneath, secondary nerves very slender, 7 to 8 inches long 3½ to 3¾ inches wide, petiole ¼ inch long. Stipules ovate triangular cuspidate nearly ¼ inch long. Peduncle 1-2 inches long with 3 or 4 divaricating branches pubescent, the branches sometimes cymosely branched again. Flowers very small ⅛ inch long crowded in cymes on the ends of the branches. Bracts and bracteoles lanceolate, the former $\frac{1}{8}$ inch long in pairs, the uppermost ones orbicular with ciliate margins. Calyx lobes orbicular margins ciliate. Corolla greenish white rather coriaceous, lobes valvate ovate shorter than the tube. Anthers linear acuminate.

Pahang: Kwala Tembeling, Tahan river (Becher's expedition); Selangor: near the Batu Caves (No. 8258); Perak at Tapah; St. Barbe isle, South of Singapore (Lauglasse). In thick woods.

The name is associated with Mr. H. M. Becher, an explorer drowned accidentally in the river Tahan in 1893, during an expedition in which this plant was collected.

I cannot find any genus which can include this plant. It has the appearance to some extent of an *Adenosacme,* but the fruit which I have not seen fully ripe separates it. The enlargement of the calyx into distinct wings is curious.

Ixora micrantha, n. sp.

Large shrub. Leaves thinly coriaceous lanceolate acuminate at both ends but more gradually at the base 4 inches long, one inch wide, nerves 9 not very conspicuous, petiole $\frac{1}{4}$ inch long, winged to the base. Stipules abruptly subulate from a broad base $\frac{1}{4}$ inch long, compound cymes terminal 4 inches long, peduncles of cyme $1\frac{1}{2}$-2 inches long red brown, minutely hairy secondary branches about an inch long, pedicels very short, central flowers of cyme nearly sessile. Bracts ovate acuminate $\frac{1}{10}$ inch long, or less. Calyx small campanulate with 4 very short rounded lobes $\frac{1}{10}$ inch long. Corolla tube nearly $\frac{1}{4}$ inch long slender, lobes oblong rounded at the tip, whole limb about $\frac{1}{4}$ inch long.

Selangor: Sempang mines.

This species seems most nearly allied to some forms of *I. grandifolia,* Wall.

Timonius Finlaysoniana, Hook. fil.

This is reduced to a variety of *T. Jambosella* by King and Gamble, but that can hardly be maintained. The plant is a tidal mud bush with white flowers, and very different from the open country yellow flowered *T. jambosella* in almost every organ. It is undoubtedly as good a species as any in the genus.

Timonius malaccensis, King and Gamble.

The type of this is given as collected by me on Mt. Ophir No. 3217, but the only Timonius collected by me there bears the number 3231.

This is a shrub, resembling *T. Rumphii,* (which is a tree however) but differs in such characters as one would expect to find in a mountain region. There is also another species in Mt. Ophir, or it may be a further modified form, described further on. Neither exactly fit King and Gamble's description. Another mountain *Timonius* was collected on Gunong Tahan by Robinson and

Wray. It is of the same type as the Ophir plants, but differs in several important characters. The *Timonius* Rumphii of Penang Hill, differs again remarkably from that of the south of the Peninsula, approaching the Mt. Ophir plant in its stiffer leaves which are nearly glabrous and not silvery yellow on the back as is the case in the Singapore plant, and Hooker in the Flora of British India points this out and suggests that they form a different species.

Timonius oreophilus, n. sp.

A shrub, bark dark coloured. Leaves broadly lanceolate acuminate at both ends coriaceous, nerves seven pairs, above glabrous, beneath lighter coloured with midrib and nerves covered with appressed hairs, 3 to 6 inches long, 1½ to 2 inches wide, petiole thickened at the base ½ inch long back hairy. Stipules lanceolate triangular acuminate hairy, when fallen leaving a circle of hairs. Cymes shorter than the leaf. Male flowers on short cymes, peduncle ½ inch long rather thick covered with appressed hairs, branches 2 shorter similar. Bracts lanceolate acuminate. Flower ⅛ inch long shortly pedicelled. Calyx cupular with 4 short subacute teeth covered with appressed hairs. Corolla ¼ inch long hairy, lobes short blunt. Anthers linear, base prolonged deeply bifid glabrous. Style cylindric hairy. Females in pairs on long 2 inch slender peduncles. Bracts broader, ovate acuminate hairy. Drupe cylindric oblong ¼ inch long hairy crowned with the persistent calyx lobes.

Pahang: Kluang Terbang (Barnes 10886); Mt. Ophir (Hullett 837); Selangor: Bukit Hitam (Ridley 7397, 7399); Kedah Peak (a form with very narrow leaves).

Saprosma saxicola, n. sp.

A small bush, glabrous with pale bark. Leaves lanceolate shortly acuminate blunt, base cuneate, coriaceous 2 inches long half an inch wide, glabrous nerves 5 to 6 pairs elevated beneath, petiole ⅛ inch long winged nearly to the base. Stipules scabrid tubular with several long subulate teeth. Flowers not seen. Fruit ¼ inch long when dry, blue when alive crowned with four short triangular calyx teeth, and a taller conical disc, very shortly pedicelled.

Perak: Bukit Kamuning (11884 Ridley) on limestone rocks.

Totally different from any other species recorded from the Peninsula and most resembling *S. nativitatis* of Christmas island.

Saprosma pubescens, n. sp.

Shrub much branched, bark pale, young parts shortly scabrid pubescent. Leaves elliptic to lanceolate acute or acuminate, base shortly narrowed above glabrous, beneath pubescent or scabrid puberulous on the midrib, 4-5 inches long 1½-2 inches wide, petiole ⅛ inch or much less long, nerves 5 pairs. Stipules of numerous pale subulate processes, ⅛ inch long. Cymes very short in flower of about 5 flowers. Bracts of several subulate teeth. Peduncles and pedicels very short, lengthening in fruit to a quarter of an inch respectively. Pedicel and calyx tube scurfy pubescent, lobes short ovate 5. Corolla ¼ inch long white tube gradually dilated upwards, pubescent lobes spreading half as long 4, oblong obtuse. Stamens included. Style exsert hairy. Stigmas large cuneate truncate. Fruit globose ¼ inch through scurfily rough, crowned with the short calyx lobes 2 celled 2 seeded. Seed orbicular rounded on the outside and flattened on the inner.

Pahang: Tahan river (Ridley 2210).

var. *hirsuta*. Leaves lanceolate acuminate with a long point narrowed to the base above glabrous beneath hairy all over, flower pedicels longer. Flowers yellow.

Malacca: Relau woods base of Ophir (Ridley 3217).

Chasalia bracteata, n. sp.

A woody shrublet, 15-17 inches tall, stem ⅛ inch through with pale bark, little or not branched. Leaves narrowly lanceolate acuminate at both ends coriaceous glabrous, nerves usually invisible, 5 pairs, keel elevated, 4 inches long 1 inch wide or less, petiole ¼ inch. Styles connate shortly tubular with 2 short ovate lobes. Inflorescence shortly cymose capitulate terminal half an inch long, on a peduncle an inch long, bracteate. Bracts 2 at base of inflorescence ovate lanceolate ¼ inch long. Bracteoles lanceolate cuspidate. Flowers about 12 on the head sessile. Calyx short entire cup-shaped. Corolla white nearly half an inch long tube nearly straight cylindric below dilate on the upper third, lobes ovate reflexed. Stamens 5 adnate at the base of the dilated portion, filaments very short. Anthers linear oblong rather broad blunt, connective broad, included. Style a little longer, stigma broad reniform emarginate. Fruit not seen.

Selangor: Semangkok Pass at 4000 feet elevation (Ridley 12073).

Lasianthus venulosus, n. sp.

A stout shrub, branches appressed hairy when young. Leaves coriaceous elliptic acuminate narrowed shortly at the base, 5-6 inches long 2¼-2½ inches wide, above glabrous, beneath hairy on the nerves, nerves 7 pairs elevated on both sides when dry, secondary nerves parallel conspicuous beneath, petiole appressed hairy ¼ inch long. Stipules broad hairy. Glomeruli sessile shorter than the petiole. Bracts lanceolate acute ⅛ inch long hairy. Calyx lobes lanceolate acute hairy 4. Corolla ¼ inch long white, tube glabrous, lobes oblong blunt rather large, mouth of tube hairy. Stamens exsert, anthers elliptic 4. Fruit subglobose hairy, crowned with the sepals forming a kind of beak, very hairy, whole fruit ¼ inch long.

Singapore: Chan Chu Kang (6146), Bukit Panjang (12542).

Allied to *L. singapurensis*, King.

Psychotria Cantleyi, n. sp.

Scandent with slender branches. Leaves ovate acuminate to lanceolate base rounded or more or less narrowed in the more lanceolate forms, glabrous or the midrib on the underside covered with red hairs, 2-3 inches long ½-¾ inch wide nerves 6 pairs petiole ⅛ inch long. Stipules connate cylindric short with 2 short ovate points. Inflorescence of one or two compact cymes on peduncles ¼ inch long. Bracts linear obtuse ⅛ inch long. Bracteoles ovate acute. Calyx short obconic lobes 5 ovate acute. Corolla ⅛ inch long, lobes 5 rounded at the tip half as long as the tube, glabrous, outside. Stamens included, anthers oblong, filaments very short with tufts of hair on the corolla tube between style exsert rather stout with rather broad recurved stigma. Fruit when young pyriform, adult sub-globose white pulpy, ⅜ inch long, pyrenes obovate 3 ribbed outside smooth on the inner face.

Singapore: Chua Chu Kang; Johore: Mount Austin, Kwala Sembrong (Kelsall); Negri Sembilan: Buruang (Cantley), Bukit Sulu (Cantley); Selangor: Semangkok Pass (Ridley 8,573); Malacca: Chenana puteh (Cantley); Pahang: Kota Glanggi and Sungei Tahan (Ridley 5,830); Perak: Tapah (Ridley 14,072).

Native name "Akar Suburuteh putih." Allied to *P. laxiflora*, Bl. but with very much shorter inflorescence.

COMPOSITAE.

Gynura zeylanica, var. *malasica*.

Herb 2-3 feet tall, stem solid stout ribbed when dry glabrescent. Leaves linear oblong acute strongly lobed and toothed, base dilate half, amplexicaul or sessile 4-5 inches long ¼-¾ inch wide, upper leaves often linear acute single toothed and not winged at the base, with scattered hairs on the edges and midrib. Capitula numerous usually crowded, in a single head or in strong plants on branches four inches long, peduncles very short to 1 inch long. Capitula ⅜ inch long. Basal bracts linear short. Involucral bracts purplish, linear acuminate in one row, fleshy. Calyx pappus nearly as long as the corolla white. Corolla little longer than the involucre pale yellow, lobes short blunt, hardly dilated below, tube nearly white, lobes sometimes tipped reddish. Stamens as long as the lobes pale pink, apiculate. Style arms rather short yellowish. Fruit pappus pure white very fine. Achene cylindric light brown ribbed longitudinally with a circle of brown processes at the apex, with five short hairs on the bands between the ribs.

Waste ground. Common.

Singapore: Tanglin, Tanjong Katong; Johore: Tana Merah Road (Ridley 2741); Pulau Dayong (Kelsall); Muar: Bukit Kayara, Sungei Pauh (Fox); Pahang: Sungei Meiang; Penang: Tanjong Bunga (Curtis 3400); Tringanu: Bundi (Rostado).

One of the plants recommended as a cure for opium craving. A piece said to be from Shanghai was sent me as thus used.

The plant is undoubtedly closely allied to the Ceylon plant which is recorded as a montane plant, only differing in its being much more glabrous. This plant was in the flora of the British India referred to *G. Pseudo-china,* Dec. a plant with leaves all subradical. The Malayan Peninsula plant has the stem leafy, and its general appearance is that of a *Sonchus.* In the Materials it appears to be described in combination with the next species under the name *Gynura bicolor* a Moluccan plant with much larger spreading heads and apparently absent from the Peninsula. The roots are not tuberous as is said to be the case in *G. pseudo-china,* but fibrous, nor can I fit it to any of the species described from India, Malay islands or China. It only occurs in waste ground in open spaces, cleared by cultivation, and is presumably not a true native of the Peninsula but an introduced weed.

Gynura rosea, n. sp.

A herb two to three feet tall. Stem solid ribbed when dry. Leaves petiolate not auricled 12 inches long or much less, deeply lobed to the midrib or nearly so, lobes dentate decurrent on the midrib very variable in size and dentation, quite glabrous green or often more or less purple. Capitula numerous on branches often 3 inches long, or in a single cluster, whole capitulum ¼ to ½ inch long, occasionally when in fruit, cylindric. Involucre cylindric hardly swollen at the base green. Lower bracts linear acute. Involucral bracts narrow linear olive green cuspidate minutely hairy, keeled with a scarious edge. Calyx pappus hairs very fine silky bright pink. Corolla pale rose nearly white, lobes tinted pink. Achene brown ribbed glabrous narrowed to the tip, pappus white.

Singapore: Gardens, Pulau Ubin, Chan Chu Kang; Pahang: Telom; Selangor: Kwala Lumpur (Curtis 2349); Perak: Ipoh (Curtis 2995); Penang: Government Hill (Curtis 2995); Dindings: Lumut (Ridley); Java: Sindang Laya (Hullett).

A common weed in waste ground, I can find no name for this plant. King confuses it with the last species under the name of *Gynura bicolor,* DeC. from which species it is entirely different. It is easily recognized by its deeply cut leaves and rose pink flowers.

ERICACEAE.

Rhododendron spathulatum, n. sp.

A shrublet with slender branches dark brown and densely minutely pustular. Leaves coriaceous whorled 4 to 8 in a whorl obovate to spathulate apex rounded entire, base cuneate, nerves invisible, back densely glandular pitted half an inch long, ¼ inch wide, petiole rugose, ⅛ inch long. Flowers terminal subtended by two or three ovate ciliate coriaceous truncate bracts. Pedicels ⅛ inch long, Calyx entire flat annular. Corolla ¾ inch long tubular with short rounded lobes ⅛ inch long, glandular dark red. Stamens included glabrous. Fruit conic grooved glandular, ⅛ inch long.

Perak: on Gunong Kerbau at 7000 feet altitude, collected by Mohammed Aniff, May 1909.

This species is allied to *Rh. elegans,* Ridl. of Gunong Tahan and even more closely perhaps resembles *Rh. cuneifolium,* Stapf. of Kina Balu, differing in its broader and not retuse leaves and longer and narrower tube of the corolla.

Agapetes parviflora, n. sp.

Epiphyte, stems woody slender, bark dark colored, young parts pubescent. Leaves deltoid acuminate with a long point base broad truncate coriaceous glabrous, shining nerves slender not very conspicuous but visible on both surfaces, 6 pairs, reticulations visible on both surfaces, 3 inches long 1¼ inch wide, petiole thick ⅛ inch long. Flowers in axillary racemes of 3 flowers, peduncle ⅛ inch, pedicel ½ inch long, pubescent. Bracts numerous linear subulate at the base of the peduncle. Bracteoles at pedicels small ovate all pubescent. Calyx campanulate hairy, lobes 5 shorter ovate hairy. Corolla 1/10 inch long shortly tubular cylindric as long as broad, lobes very short ovate obtuse recurved fleshy, pink. Stamens 10 very short, filaments from the base of the tube linear oblong papillose white, anthers orange as long as the filaments, dorsifixed oblong opening by terminal pores with 2 short upcurved spurs behind. Style stout cylindric. Disc pulvinate lobed. Berry globose red hairy ¼ inch through. Seeds numerous ellipsoid flat reticulate.

Selangor: on trees at the Sempang Mines, April 1911.

MYRSINEAE.

Ardisia monticola, n. sp.

Branching shrub. Leaves narrow lanceolate gradually acuminate to both ends blunt coriaceous 2½ inches long ½ inch wide, main nerves and secondary nerves similar fine, reticulations fine conspicuous, leaves dark brown glossy and glabrous, no visible glandular dots. Peduncle slender lateral, 1 inch long bearing 2 or 3 pedicellate flowers, pedicel half an inch long. Calyx lobes 5 ovate margins ciliate short. Corolla half an inch across lobes 5, lanceolate acute very shortly connate pink not gland-dotted. Stamens shorter than the corolla lobes, about ¾ of their length, filaments broad at the base narrowly acuminate. Anthers lanceolate not broad, base emarginate apex acute minutely apiculate. Drupe globose ⅙ inch through not gland dotted.

Selangor: Hulu Semangkok (Ridley 12065).

Ardisia Barnesii, n. sp.

Shrub, glabrous. Leaves coriaceous elliptic narrowed at the base tip acuminate, subacute nerves main and secondary similar reticulations conspicuous, 3 inches long 1 inch wide, glandular dots visible beneath numerous. Petiole ⅛ inch long. Inflorescence terminal and axillary in the upper axils, peduncle ½-1 inch long, fairly stout bearing 2 flowers on pedicels half an inch long. Calyx lobes shortly free, orbicular with ciliate margins half as long as the petals. Corolla lobes 5 short oblong ovate, forming a short broad cone in bud, corolla half an inch across when expanded, tube very short. Stamens $\frac{3}{4}$ length of corolla, filaments linear. Anthers lanceolate rather broad, not gland-dotted, base broad emarginate.

Pahang: Kluang Terbang (Barnes 10890).

Allied to the last species in its coriaceous finely reticulate leaves, and few flowers from the upper axils but this has broader leaves, and larger sepals, broader and shorter corolla tube. *A. biniflora,* Ridl. belongs to the same group.

Ardisia pallidiflora, n. sp.

Shrub, glabrous. Leaves coriaceous lanceolate ovate to ovate elliptic shortly acuminate narrowed at the base, 3-4 inches long 1-1$\frac{3}{4}$ inch wide, nerves slender 9-10 pairs, primaries hardly distinct from the secondaries, reticulations equally conspicuous, petiole $\frac{1}{4}$ inch long. Panicles on the ends of the lateral branches with few leaves, branchlets 3-4 short, flowers umbellate at the tips. Bracts to branches linear lanceolate $\frac{1}{4}$ inch long, lower ones leaf-like. Umbels of 6 or more flowers on short pedicels thickened upwards $\frac{1}{10}$ inch long scurfy. Bracteoles oblong lanceolate blunt half as long as the pedicels pustular on the edge. Calyx lobes $\frac{1}{10}$ inch long lanceolate rather narrow, 5 covered with red and black glandular dots. Corolla lobes but little longer oblong truncate 5 pale pink, glandular. Stamens, anthers lanceolate nearly as long as the petals, bases rounded keeled on the inner face. Style little longer.

Johore: Tempayan River (Ridley 13268).

In dense wet forest.

Ardisia (§ *Bladhia*) *linearifolia,* n. sp.

A shrublet 6 to 8 inches tall, with a dusky stem, about $\frac{1}{6}$ inch through covered above with short stiff hairs. Leaves lanceolate linear herbaceous light green, pale beneath, acuminate, margins armed with numerous short thorns undulate, glabrous above pubescent on the keel beneath, nerves about 16 pairs short nearly horizontal and meeting in large conspicuous loops; blade 5 inches long, half an inch wide; petiole $\frac{1}{4}$ inch long dusky, pubescent. Pseudostipules linear acuminate bodies half an inch long from the stem between and above the leaves. Racemes from the axils of the upper leaves spreading decurved, little more than half an inch long peduncle glabrous half an inch long bearing 3-4 flowers on short $\frac{1}{4}$ inch long pedicels. Bracts linear acuminate. Flowers very small hardly $\frac{1}{4}$ inch across. Sepals 5 triangular acute. Petals imbricate not contort white reddish keeled and tipped $\frac{1}{8}$ inch long. Stamens 5 whitish, filaments very short, anthers lanceolate obtuse. Style slender little longer white filiform.

Province Wellesley on Gunong Bongsu, 12 miles south east of Bukit Mertajam and 7 miles north west of Selama near Sungei

Serdang (Mhd. Aniff). Flowered in the Singapore Botanic Gardens, May 1911.

A very curious little species with remarkably narrow and elegant leaves, and very inconspicuous little flowers, which are dull reddish tinted white, and quite eglandular.

STYRACEAE.

Styrax (*Cordyloblaste*) *obovata,* n. sp.

A stunted shrub, much branched with dark grey bark. Leaves alternate obovate rounded coriaceous base cuneate, nerves five pairs thin bifurcating, anastomosing far within the margin visible on both surfaces, 2 inches long 1 inch wide, petiole thick ¼ inch long. Flowers in short axillary racemes half an inch long all pubescent silky, peduncle short. Bract ovate obtuse as long as the very short pedicel. Calyx ¼ inch long goblet shaped with 5 very short rounded lobes, silky pubescent. Corolla ⅜ inch long, entirely pubescent outside and in, lobes oblong rounded half as long as the tube. Staminal tube adnate to the corolla as far as the base of the lobes, and projecting beyond in fine broad truncate lobes, hairy within. Anthers small subglobose, about 60. Style stout very hairy about as long as the tube, stigma large capitate. Ovary and disc hairy.

Perak: Gunong Kerbau (Aniff 3820) at 7000 feet altitude.

The smaller size of the flowers distinguishes this from *S. Maingayi* and *S. Scortechinii,* and the form of the leaves also from these and from *S. confusa.*

SAPOTACEAE.

Sideroxylon glabrum, n. sp.

Tree, leaves broadly lanceolate base acuminate, apex blunt, coriaceous drying greenish, nerves slender 6 pairs, midrib stout 5 inches long 2 inches wide, petiole half an inch long. Flowers in tufts of 3 or 4 on the stem below the leaves, pedicels ¼ inch long. Sepals orbicular 5 imbricate margins ciliate ⅛ inch long. Corolla at the base. Staminodes linear from a wider base adnate to the corolla. Ovary densely hairy. Style conic obtuse thick.

Selangor: Sempang Mines (Ridley).

Payena grandiflora, n. sp.

A tree, young leaves ferruginous hairy, adults glabrous except for a few red pairs on the midrib, coriaceous thick oblanceolate acuminate at the base, apex blunt or shortly acuminate, above dull slightly shining green, beneath pale glaucescent, nerves about 20 pairs inconspicuous, midrib stout, seven inches long, three inches wide, petiole stout at base tapering upwards, 1¼ inch long. Stipules acuminate hairy caducous. Flowers in clusters below the leaves, pendulous numerous. Bracts small ovate chesnut hairy. Pedicels stout an inch long covered with yellowish red pubescence. Sepals ovate subobtuse nearly half an inch long 5, the two inner ones whiter and more petaloid on the edge than the outer ones. Corolla over half an inch long, lobes narrow acuminate 10, very little longer than the rounded tube, hardly in two whorls slightly imbricate, silky hairy within. Anthers 20 hairy pale brownish oblong, base bilobed, apex prolonged into a long acuminate point, half as long as the petals. Style half an inch long, apex curved pale green, ovary brown discoid. Fruit cylindric rufous, an inch long. Seed albuminous.

Singapore: Sungei Morai (6497); Malacca: Panchur (Goodenough 1268).

Described mainly from a tree in the Botanic Gardens Singapore believed to have come from Sumatra, specimens of which have been distributed under the number 113711.

This fine species has been confused with *Payena Maingayi,* Hook. fil. by King and Gamble in the Materials, from which it differs in its stiffer harder leaves, which become whitish beneath when old, and its very much larger flowers and long stout pedicels.

APOCYNACEAE.

Ervatamia coriacea, n. sp.

Tree about 20 feet tall. Leaves oblong obtuse slightly narrowed at the base thickly coriaceous dark green above paler beneath, nerves 15 pairs beneath dotted over with raised glands, 5 to 7 inches long, 1½-3 inches wide, petiole half an inch long, axillary glands forming a cup stipuliform. Compound cymes 3 inches long, peduncles 2 inches long, pedicels one inch rather thick. Calyx short campanulate lobes subacute ⅛ inch long. Corolla tube half an inch long, lobes oblong lanceolate obtuse white ¼ inch long. Stamens anthers linear oblong mucronate filaments rising from about the middle of the tube, decurrent to the base of the tube. Ovary carpels cohering cone-shaped narrowed upwards to the stigma. Stigma globose with 2 arms.

Selangor: Sempang Mines.

Allied to *E. corymbosa,* King and Gamble but very coriaceous completely glabrous. The plant much resembles *E. dichotoma* of Ceylon but the flowers are smaller.

ASCLEPIADEAE.

Gymnema hirta, n. sp.

Stem $\frac{1}{9}$ inch through brown hairy, leaves ovate base rounded apex acuminate abruptly, dark green above shortly hairy with dense red hairs on the nerves, beneath densely roughly hairy on the midrib and nerves, nerves conspicuous beneath 4 pairs inarching with few conspicuous secondary nerves, 3½ to nearly 4 inches long 2 inches wide, petiole 1 inch long densely brown hairy. Flowers in dense axillary tufts, pedicels hairy ⅛ inch long. Calyx lobes linear hairy $\frac{1}{10}$ inch. Corolla tube thick hairy, $\frac{1}{8}$ inch long, lobes oblong short obtuse hairy shorter than the tube. Coronal processes linear hairy not prolonged above the sinus, with a scale like mass of black hairs near the base. Staminal column rather stout dark coloured. Stigma large conical white.

Selangor: Semangkok Pass, April 1911 (15564).

Gymnema dissitiflora, n. sp.

Long slender pubescent branched twiner. Leaves membranous when dry ovate or elliptic ovate cuspidate acuminate base cuneate 2 inches long $\frac{3}{4}$ inch wide, glabrous except the midrib beneath covered with appressed hairs, petiole hairy $\frac{1}{8}$-$\frac{1}{4}$ inch long. Inflorescence axillary of a slender hairy rachis with distant cymes of numerous flowers 3-4 inches long. Pedicels $\frac{1}{8}$ inch hairy. Calyx lobes ovate hairy outside. Corolla tube very short, lobes ovate obtuse short broad valvate. Corolline scales small rounded semiovate. Staminal column short very small, filaments linear rather broad, anthers rather wide with a short broad appendage, ovary of 2 carpels.

Perak: Tapah (Ridley 14058).

Tylophora squarrosa, n. sp.

Stem slender long climbing, internodes 3 inches long glabrous. Leaves ovate cuspidate base broad rounded glabrous 2-3 inches long one inch wide, nerves 4 pairs membranous drying pale. Peduncles axillary an inch long bearing one or two elongating racemes at length half an inch long, covered with lanceolate acuminate persistent crowded bracts $\frac{1}{20}$ inch long, pedicels $\frac{1}{8}$ inch long. Flowers very small. Calyx lobes narrow lanceolate glabrous. Corolla tube very short, lobes ovate obtuse. Coronal scales oblong obtuse as long as the filaments. Anthers small with short rounded appendages.

Singapore: Woodlands in mangrove swamps; Johore: Tana Merah Road (Ridley 2737).

The inflorescence is unlike that of any other species known to me.

Hoya crassifolia, n. sp.

Stem rather stout with rugose often pale bark rooting profusely. Leaves very coriaceous ovate acuminate slightly cordate at the base, margins undulate and minutely irregularly dentate, nerves very inconspicuous 3-4 pairs at an acute angle, midrib inconspicuous 6 inches long $2\frac{1}{2}$ inches wide, petiole very short and thick. Peduncle $1\frac{1}{2}$ inch long rachis half an inch long with elliptic scars, pedicels slender $\frac{1}{4}$ inch long, hairy with long rufous hairs. Sepals small linear lanceolate acuminate. Corolla half an inch across pink, lobes triangular cuspidate with a long point, villous with long white hairs on the edge. Corolla scales, lower lobes long thick blunt not smooth and spining, upper ones short erect about half as long triangular acuminate. Staminal column short thick appendages long linear acuminate thin membranous and translucent white.

Perak: Tapah on trees on the Temoh Road (Ridley 14059).

A most remarkable plant with its hard stiff leaves roughened with short tooth-like processes at the edge, hairy pedicels and long thin stamen appendages.

Hoya occlusa, n. sp.

Stem rather stout four angled, bark pale. Leaves ovate acuminate in pairs, base obtuse glabrous above shining greenish when dry, below brownish, coriaceous, nerves 5 pairs rising at an acute angle, slender, elevated beneath, 4 inches long 2 inches wide, petiole 1 inch long. Peduncle axillary stout angled 2 inches long, rachis of raceme thickened. Flowers numerous crowded on slender pedicels ¼ inch long, hairy. Sepals linear lanceolate acuminate nearly ⅔ds as long as the petals. Petals ovate obtuse ⅛ inch long glabrous, campanulate. Column as long as the sepals. Coronal lobe of 5 processes, lower lobes shorter than upper fleshy, apex broad lanceolate, upper ones lanceolate oblong with broad scarious edges. Staminal column short. Pollinia long pyriform, attached by a slender caudicle to a very narrow dark brown pollen carrier.

Selangor: Top of the Batu Caves, Dec. 1890 (Ridley).

This species is remarkable in that it appears not to fully open its flowers, the petals not being spreading nor reflexed, the corona lobes are not polished as is usual in the genus and the lower lobes are short.

Dischidia singaporensis, n. sp.

Slender climbing with orbicular ovate more rarely lanceolate leaves, bases rounded, apex usually acute glabrous fleshy ¾ inch long ½ inch wide, lanceolate ones nearly 2 inches long by 1 inch wide, petiole ⅛ inch long, nerves invisible, midrib slender prominent. Flowers on a short peduncle with thickened rachis, pedicels slender short hairy. Calyx lobes ovate subobtuse hairy. Corolla dilated at base gradually narrowed upwards ¼ inch long pubescent lobes hairy at the tip, lobes linear obtuse. Coronal scales retuse at top with 2 recurved linear arms. Staminal column tall, basal lobes double cylindric pale as long as upper lobes, obtuse. Pollen masses elliptic pyriform sealed on short brown pollen carriers.

Singapore: Changi Police Station, Bukit Mandai on a high tree.

This is distinct in its rather large corolla dilated at the base and narrowed at the apex, with pubescent lobes. *D. Deschampsii,* King and Gamble of which only leaves and peduncles are described cannot I think be intended for this as the nerves are invisible in this species though described in *D. Deschampsi.*

Dischidia rosea, n. sp.

Stem slender elongate. Leaves in distinct pairs, 1½ inch apart, ovate quite obtuse subcordate fleshy, when dry with one pair of basal nerves, ascending along the edge and 2 pairs branched nerves, ¾ inch long by ½ inch wide, petiole $\frac{1}{10}$ inch long. Racemes axillary, peduncle stout, ¾ inch long, rachis short. Bracts minute. Pedicels $\frac{1}{10}$ inch long. Flowers rose-pink ¼ inch long. Sepals lanceolate obtuse. Corolla urceolate, swollen at base gradually narrowed into a tube with 5 acute ovate short lobes, villous in the mouth. Coronal scales thin large, claw linear, limb reniform three lobed, central lobe small subovate, side lobes incurved ovate. Staminal column large darker colored, filaments part cylindric, conic. Anther wings thick hardly hairy, anther cells parallel, appendages thin short ovate, apices incurved. Pollinia ellipsoid on red cornucopia-shaped carriers. Capsule narrow linear acuminate 2¼ inch long. Seed narrowly oblong base rounded apex truncate, papillose.

Selangor: on a tree Sempang Mines.

It resembles *D. coccinea* in its extremely short or practically no caudicles to the pollinia, otherwise it is nearer to *D. Scortechinii.*

Dischidia (§ *Conchophyllum*) *longe-pedunculata,* n. sp.

Leaves oblong convex, approximate, 1½ inch long half an inch wide hairy light brown, purple beneath. Peduncles stout $\frac{1}{10}$ inch through 3½ to 4 inches long hairy. Raceme very short $\frac{1}{10}$ inch with a number of crowded flowers. Bracts hairy. Pedicels very short and thick. Sepals ovate pink hairy obtuse. Corolla campanulate not narrowed above, cream-yellow, glabrous lobes short ovate triangular pink half as long as the broad globose tube, tube glabrous within, with 15 strong ribs. Corona scales none. Column reaching to the mouth of the tube. Filament column cone shaped, rather long. Anther wings oblong pale not horny large, cells erect parallel. Pollinia pyriform with broad flat semi-elliptic thin pedicels, carrier very small linear elliptic. Anther appendages large ovate acute thin. Carpels rather large cone-shaped. Style apex conical. Follicle solitary, 2½ inches long, ¼ inch wide when expanded, coriaceous. Seeds thin flat lancolate pale pustular.

Selangor: Sempang Mines. On a fallen tree.

This is certainly allied to *D. astephana*, Scortechini, but the great size of the pedecles, the rounded corolla, not angled glabrous within with no trace of a corolline corona, and the peculiar pollinia make it very distinct. The corolla in life is quite widely open at the top, so that the staminal column is visible. The caudicles of the pollinia are very different from those of most *Dischidia* being quite broad and flat.

LENTIBULARIACEAE.

Utricularia fluitans, n. sp.

Stems slender six feet or more long, base nude, slender light green with internodes an inch long, above with slender branches 4 or 5 inches long bearing bladders solitary axillary, terminal branches finely cut with terete branchlets, dichotomous flexuous ½ inch long or more with few bladders. Bladders ovate obtuse. Raceme 3 inches long flowers few white on slender pedicels $\frac{1}{4}$ inch long. Bracts lanceolate acute $\frac{1}{10}$ inch long. Calyx lobes ovate obtuse $\frac{1}{10}$ inch long. Corolla an inch across. Upper lobes reniform or ovate apex rounded $\frac{1}{4}$ inch long and as wide, lower lobe broader transversely elliptic half an inch wide and $\frac{3}{5}$ inch long, all white with a yellow central spot. Spur shorter conic obtuse stout $\frac{1}{4}$ inch long. Fruit not seen.

Johore: Kota Tinggi river.

A very remarkable floating species attached to the base of the mud, flowers very seldom.

GESNERACEAE.

Aeschynanthus stenophylla, Ridl.

This species was described from a fruiting specimen collected by Kunstler in Perak, the flowers being unknown. I obtained a large clump of it a year ago from the house of a planter in Sedenah, Johore, and it flowered in November 1909, I am therefore able to give a fuller account of it. The stems are tufted slender red brown. The lower leaves elliptic fleshy blunt an inch long and $\frac{1}{4}$ inch wide, dull light green, they become narrower towards the apex of the stem till the uppermost ones are linear, 2 inches long and $\frac{1}{8}$ inch wide. The flowers are terminal or occasionally lateral, solitary, borne on a pedicel $\frac{1}{8}$ inch long. The calyx lobes linear acuminate very narrow $\frac{1}{16}$ inch long. The corolla $\frac{3}{4}$ inch long, a rather slender straight tube, with short rounded lobes which hardly open, all cream yellow with a purple edge to the tubes. The stamens are hardly longer than the corolla lobes and do not appear to be protruded. The style is short $\frac{1}{4}$ inch long purple, the ovary longer slender terete green. The plant appears to be self-fertilised, the tube with the stamens slipping off from the ovary and drawing the anthers over the stigma.

Didymorcarpus soldanella, n. sp.

Stem short, leaves in a rosette about twelve, oblanceolate to oblong, blunt, slightly narrowed towards the rounded base slightly petioled, margins doubly crenate glabrous on both surfaces, bullate above nerves 10-11 pairs, dark green above paler beneath with prominent reticulations, 3 inches long by one inch across. Scapes several erect slender 2 inches tall red pubescent. Flowers 3 in a terminal cyme nodding. Bracts very small linear. Calyx lobes linear, narrow pubescent dull red $\frac{1}{10}$ inch long. Corolla campanulate oblique violet minutely sparingly pubescent. $\frac{3}{8}$ inch long $\frac{1}{4}$ inch across lobes, upper ovate triangular lower lip longer, lobes short ovate triangular. Stamens 2 filaments short sinuate violet, anthers connate, reniform, yellow-white. Ovary and style cylindric pubescent. Stigma capitate. Capsule narrow cylindric.

Perak: on Gunong Kerbau (Aniff). Flowered in the Botanic Gardens Singapore, July 1910.

Allied to *D. pumila.*

A very distinct little plant with very pretty bell like flowers of a violet colour. The leaves are subpeltate at the base.

Boeica nutans, n. sp.

Stem less or nearly so. Leaves forming a rosette ovate apex rounded, and base also, margins crenulate, four inches or less long 3 inches wide densely hairy above, with white curved hairs, paler beneath with suberect hairs, petiole $\frac{1}{4}$ inch hairy. Flowers numerous solitary on erect pedicels, nodding. Pedicels 1-1$\frac{1}{2}$ inch long hairy. Calyx lobes lanceolate acute densely hairy. Corolla quite regular $\frac{1}{2}$ inch across violet blue, tube very short, lobes oblong ovate rounded at the tip all equal. Stamens 4, anthers elliptic sessile, erect, with a thick connective orange yellow polished outside, cells linear much narrower, on the inner face, introne pollen yellowish white, dehiscence the whole length. Ovary conic passing gradually into the short thick style, greenish white pubescent. Stigma orbicular.

var. *a,* leaves green with white hairs. *b,* leaves deep olive with violet hairs.

Perak: on Gunong Kerbau (Mohammed Aniff).

This pretty plant is certainly allied to *Boeica brachyandra,* Ridl. though it differs in the broad rounded leaves, one flowered pedicels, perfectly regular flowers and very different stamens. The pollen I found attacked by small nematode worms.

Chirita uniflora, n. sp.

Stems slender 15 inches long hairy. Leaves lanceolate or oblanceolate shortly acuminate acute base cuneate, nerves 5 pairs hairy with multicellular hairs 2 inches long and less than one inch wide, petiole half an inch long slender. Flowers solitary terminal on a slender hairy pedicel with 2 linear bracts $\frac{1}{10}$ inch long about half way down. Calyx lobes very narrowly linear acuminate hairy $\frac{1}{8}$ inch long white. Corolla tube very short hardly twice as long as the calyx, limb half an inch across, upper lobes short, linear oblong obtuse, midlobe broad rounded, all white with 3 violet streaks on a yellow patch on the lower lip. Stamens 2 very short, anthers ovoid. Style hairy longer, stigma elongate flat.

Selangor: Sempang Mines, one plant only in flower.

Perhaps nearest to *Ch. viola,* Ridl., very different from anything I have seen elsewhere, and not much like any others of the genus.

ACANTHACEAE.

Justicia pectinella, n. sp.

Here about 2 feet tall, stems rather stout internodes 2 inches long, nodes swollen. Leaves rather fleshy ovate or oblanceolate narrowed gradually to the base, acuminate, usually inaequilateral margins undulate glabrous except the scurfy midrib on the back densely dotted with raphides bundles on both sides, nerves 6 to 9 meeting with loops within the margin, 4 to 6 inches long 1½-3 inches wide, petiole winged to the base. Racemes terminal and axillary 2 inches long, with a short peduncle. Bracts lanceolate acuminate $\frac{1}{10}$ inch long. Flowers yellow secund crowded. Floral bracts ovate subacute shorter than the calyx green. Calyx ⅛ inch long, lobes subulate linear purple deeply cut to near the base. Corolla yellow ½ inch long, tube straight stout, upper lobe oblong truncate, lower lobe broader oblong. Anthers elliptic with long white appendages. Capsule club-shaped half an inch long. Sepals as long as the slender portion, ¼ inch long. Seed orbicular pubescent.

Johore: Gunong Panti; Pahang: Kwala Tahan (Ridley 2185), and Kota Glanggi woods; Selangor: Ginting Sempah.

This species has the flowers distinctly secund as has *J. secundiflora* of Temengoh, but the whole texture of the plant is that of *J. uber* a fleshy succulent herb and quite glabrous. The leaves vary a good deal; those of the Johore and Selangor forests being ovate, the Pahang ones, lanceolate and often oblique.

Filetia hirta, n. sp.

An ascending herb, stem somewhat woody purple hairy above. Leaves ovate to ovate lanceolate slightly narrowed to the base, apex shortly acuminate obtuse 2½ inches long 1 inch wide, nerves 6 pairs, with multicellular hairs on both surfaces, but very densely on the midrib and nerves of the undersurface petiole ¼ inch long, densely hairy. Raceme 3 inches long, base (1½ inch) nude, hairy. Bracts linear hairy ¼ inch long. Sepals linear acuminate hairy, free nearly to the base, half as long as the corolla. Corolla half an inch long, tube stout curved, limb white upper oblong obtuse, lip somewhat similar yellow, corolla sparingly pubescent all over, outside, lip glabrous except for a few hairs. Anthers linear hairy. Pistil glabrous, style hairy.

Selangor: Sempang Mines.

This resembles considerably *F. Scortechinii*, Clarke which grows in the same spot but which is almost or completely glabrous all over.

F. Scortechini, Clarke of which only one very bad specimen of Scortechini is in the Singapore herbarium is described as a much branching under shrub. However like *F. Ridleyi* it is more or less of a creeping plant throwing up a number of short stems, about 6 inches tall. The flowers like those of all of our species are white with a yellow palate on the lip. The capsule (which has not been described is ¾ inch long narrow at the base dilated at the upper end and shortly beaked. It contains 4 seeds in the upper end, flat papillose and somewhat obovate. It occurs on the Gunong Semangkok, and at Gunong Berembun above Telom.

What I take to be *F. paniculata*, Clarke also occurs on Gunong Semangkok (No. 12091).

Leda flava, n. sp.

Herb about 3 feet tall. Leaves ovate shortly acuminate at the tip narrowed at the base, glabrous rather fleshy, nerves about 8 pairs prominent, 4 inches long 2 inches wide, silvery, petiole ½ inch long. Panicle terminal of 3 or four strict branches, scurfy, flowers rather numerous quaquaversal, four inches long. Bracts linear acute $\frac{1}{10}$ inch long. Calyx $\frac{1}{10}$ inch long of 5 subulate linear lobes shortly connate at the base. Corolla yellow ⅗ inch long, tube thick as long as the limb, scabrid upper lobe, trifid lobes obtuse, lower broader deflexed. Stamens 2, anther cells parallel, with no appendages connective cn the back minutely hairy.

Perak: Tapah near Temoh, swampy woods (14053).

This has the habit of a *Justicia* but the anther cells are parallel and not spurred.

EUPHORBIACEAE.

Euphorbia Synadenium, n. sp.

A shrub about 2 feet tall, stem smooth brownish rather succulent. Leaves alternate oblanceolate spathulate subacute or blunt narrowed to the petiole fleshy green, nerves invisible 4 inches long 1½ inch wide, petiole ½ inch long. Inflorescence solitary or in pairs 1 male and 1 female axillary. Male, peduncle ¼ inch long thick with two short ovate bracts purple pink. Involucre as long pink lobes 5 thick semiorbicular light green, punctate. Glands separate truncate oblong narrowed at the base, apex laciniate pink ten. Flowers numerous. Stamens solitary, filament thickened at the base above filiform, surrounded by a fimbriate calyx of narrow white linear lobes about 8, anther cells globose separate. Female involucre smaller subangled with 2 dark pink lobes much shorter not expanded greenish yellow, glands flat incurved laciniate pale green. Pistil solitary surrounded with pale green laciniate calyx, overy subglobose shortly stalked. Styles three subulate not plumed twisted together.

Penang Hill: near the Waterfall; Selangor: Langat.

In rocky woods. I have this curious plant in cultivation in the Botanic Gardens in Singapore.

Baillon described a species of *Synadenium* as *Euphorbia Synadenia* but this has been referred to its genus *Synadenium,* so that the above name will stand.

CUPULIFERAE.

Quercus Rassa, Miq.

On the top of the mountain Gunong Semangkok grow two oaks, which are certainly not typical *Q. Rassa* but at the same time there are in the Singapore herbarium specimens which seem to be intermediate forms. The typical *Q. Rassa* is a tall tree with very narrow close veined coriaceous leaves, and this is the plant which grows on Penang hill, where it does not vary to any extent. King in the Calcutta Annals mentions a variety *latifolia* which I take it is represented by his 6983 from Gunong Hijau in Perak.

On Gunong Semangkok at 4375 feet altitude we have a plant much resembling this. Its leaves and branches are glabrous and the leaves stiffly coriaceous ovate or oblong ovate acute 3 inches long 1½ inch wide, with only 6 pairs of nerves, which are distant from each other, the minute tessellate reticulations so conspicuous in typical *Rassa,* are much less conspicuous. The petiole is a quarter of an inch long. The inflorescence terminal is stout, its bark on the rachis black and minutely pubescent. The spikes 3 inches long and stiff. The male flower bunches are rather distinct.

The acorns are sessile, with a shallow cup half an inch across, ⅛ inch deep, with about ten rings; these have the upper edge waved with distinct teeth. The glans is a short broad cone half an inch long beaked light brown and minutely silky (No. 12061 of my collection). The plant growing on the top of the Trig. station which of course has been cleared and is now covered only with low bushes is itself a low bush only a few feet tall. A specimen obtained by Barnes from Kluang Terbang (10910) resembles this somewhat but the leaves are mostly more intermediate between that and those of typical *Rassa,* some however are ovate with fewer nerves, and somewhat similar is Kunstler's No. 6983, from Gunong Hijau in the Taiping hills, which he describes as a tree 40 to 46 feet tall. This is the plant I take to be King's var. *latifolia.*

With this grows on Gunong Semangkok, a shrubby oak with lanceolate long acuminate leaves, which when young are coppery red. They are about four inches long and one inch wide. The petiole a quarter of an inch long. The young leaves are sprinkled all over with stellate hairs and these are densely crowded on the midrib and petiole. The adult leaves are nearly glabrous, the reticulations are the same in appearance on the upper surface as in the Penang *Rassa,* but are inconspicuous on the smooth lower surface. The branches are covered with a woolly mass of these stellate hairs as are the slender weak spikes. This I would call the var. *lanuginosa.*

Both of these two forms or varieties grow closely intermixed in scrubby bushes up to the waist or shorter on the top of the hill, but I saw the var. *lanuginosa* further down the hill about 20 feet tall.

Had I not seen these plants intermixed with intermediate foliage, I should certainly have distinguished them specifically, both from each other and from *O. Rassa,* but I would rather class that species as a very variable oak varying according to altitude and exposure, of the mountain on which it grows.

ORCHIDEAE.

Microstylis flavo-viridis, n. sp.

Stem weak ascending leaves scattered; whole plant 11 inches long. Leaves thin herbaceous lanceolate 2 inches long ¾ inch wide, narrowed to the petiole half an inch long. Racemes slender few flowered, flowers distant small. Bracts very narrow lanceolate long acuminate $\frac{1}{8}$ inch long deflexed green. Flowers $\frac{1}{8}$ inch long greenish yellow turning to light red, pedicels very slender longer than the bracts. Upper sepal linear oblong, laterals deflexed wider oblong obtuse. Petals narrower oblong. Lip subtriangular oblong, auricles long pointed, limb triangular lanceolate tapering towards the apex which is retuse. Column short.

Perak: Gunong Kerbau on Gunong Bal at 4500 ft., May 1909. Mhd. Aniff.

"Flowers greenish yellow changed to light red, leaves green near the midrib and light red near the edge."

Oberonia pendula, n. sp.

Stems several in a tuft 4 to 13 inches long slender pendulous. Leaves remote distichous linear acute ensiform blade 1 inch long and $\frac{1}{10}$ inch across sheath as long. Spike 4 inches long slender, flowers yellow in close set whorls, ovary very short. Bracts lanceolate acuminate as long as the flowers. Sepals ovate triangular. Petals narrower linear. Lip 3-lobed side lobes short triangular acute, midlobe lanceolate entire much longer, apex subacute, anther skull-shaped with a small tip.

Selangor: on a tree in forests by the track to the Sempang Mines, April 1911.

Bulbophyllum (§ *Diphyes*) *paullum*, n. sp.

Rhizome slender creeping, pseudobulbs distant conic curved $\frac{1}{4}$ inch long $\frac{1}{10}$ through at the base half an inch apart. Leaf oblong linear obtuse $\frac{3}{4}$-$1\frac{1}{2}$ inch long $\frac{1}{10}$ inch wide, base narrowed into a petiole. Scape filiform $1\frac{1}{4}$ inch long with a sheathing bract in the middle. Flowers 4 or 5 in a short congested receme with lanceolate acute bracts, pedicel $\frac{1}{8}$ inch long. Sepals linear acuminate not gibbous narrow   inch long. Petals linear oblong quite obtuse, one third of the length, all pale whitish. Lip short fleshy curved, base broad with a narrow claw, apex blunt orange. Column rather large, foot long free upcurved. Stelidia 2 lanceolate acuminate as long as the anther, which is rather large rounded and grooved on the top.

Selangor: Sempang Mines on a tree. A single specimen.

Allied to *B. concinnum*, Hook. fil. but with very different foliage.

Dendrobium (§ *Pedilonum*) *chloroleucum*, n. sp.

Stems slender 24 inches long $\frac{1}{8}$ inch through, the internodes about 2 inches long. Leaves thin lanceolate acuminate acute 4 inches long $\frac{3}{8}$ inch wide. Flowers solitary on a slender peduncle an inch long. Ovary and pedicel $\frac{3}{4}$ inch long. Sepals lanceolate, the upper one half an inch long, the lower ones similar with a mentum slender curved acuminate blunt, an inch long. Petals rather narrower than sepals all cream colour passing into green at the back and tip of the mentum and tip of the sepals. Lip entire spathulate 1¼ inch long, the claw linear with a low V-shaped keel at the base, lamina oblong tip rounded narrowing into the claw margins undulate, ½ inch wide, canary yellow. Column base and foot green deeply channelled in front, stelidia erect little longer than the anther oblong truncate slightly retuse, orange colour. Anther white apex rounded, front margin truncate.

Perak: Gunong Kerbau, coll. Mhd. Aniff.

Perhaps nearest to *D. hymenopterum,* Hook. fil. but differing in colour, shape of sepals, and in the keel on the disc. A dull looking plant even for this section.

Eria (*Bractescentes*) *ramulosa,* n. sp.

Stem creeping, branched several times cylindric or slightly thickened upwards, branches 6 inches long ¼ inch through covered with a silvery grey epidermis finely striate. Leaves 2 terminal lanceolate acute narrowed at the base 3 inches long ¾ inch wide thin textured. Raceme 2 inches long from below the leaves, about 6 flowered. Bracts ¼ inch long oblong creamy white. Pedicel and ovary as long, covered with dark red scurfy hairs. Upper sepal lanceolate acute ¼ inch, lower ones falcate scrotiform gibbous at base, adnate to the column foot, all pale flesh colour with pink nerves. Petals lanceolate linear falcate much narrower than the upper sepal. Lip as long as the sepals, three lobed. Side lobes falcate subobtuse pubescent pink darkest at the tips terminal lobe longer reniform bilobed, with a short tooth in the notch, disc between the side lobes whitish with a central purple-pink line elevated, and ending on the midlobe at the base in a transverse purple pink V, a shorter keel runs on each side, base brown purple, apex dark pink rest pale, dilated forwards and ending in a short raised wing at the base of the side wings. Column broad with a short foot white, Anther quadrate thin, pollinia subequal ovoid flattened bright yellow, foot of column shorter than upper part adnate to the sepals.

This species is allied to *E. xanthocheila,* Ridl. and *E. carnea,* Ridl. The lip however is distinct in the broad reniform retuse midlobe, and the two short winged lateral keels, with the low median linear one.

It was sent by Mr. Long from the Thaiping hills and flowered in the Botanic Gardens Singapore, March 1910.

Eria saccata, n. sp.

Habit of *Eria densa,* Ridl. pseudobulbs sausage-shaped cylindric 4 inches long 1 inch through. Leaf coriaceous slightly flaccid lanceolate acute narrowed to the petiole 8 inches long 1½ inch wide. Spikes 4 inches long rachis stout nigrohirsute. Bracts ovate white reflexed ¼ inch long, flowers numerous densely crowded yellowish white. Ovary and pedicel half an inch long, covered with purple scurfy hairs. Upper sepal ovate obtuse white, ⅕ inch long, laterals broadly ovate forming between a long broad white mentum nearly half an inch long. Petals shorter than the sepals ovate triangular obtuse pale pink. Lip as long as the sepals, claw long white, with pink centre rather broad oblong deeply channelled, the edges meeting near the limb, limb fleshy broad orbicular not trilobed with an irregular undulate margin, disc fleshy pustular, reddish with yellow centre. Column rather straight pink, foot very straight apex orange. Stelidia 2, acute subulate on each side. Anther broad flat, 2 celled purple black with a broad white margin and a short tooth at each side. Pollinia 8, pyriform pale yellow.

Perak: Gunong Kerbau (Md. Aniff) cult. in Hort. Bot. Singapore, 1910.

Very odd from its long *mentum* like the spur of a *saccolabium* and the complete absence of the basal lobes to the lip near *E. densa* and *E. rhynchostyloides.*

Ceratostylis linearis, n. sp.

A tufted plant, with a short rhizome emitting close tufts of stems with two leaves on each, rhizome covered with ovate lanceolate ribbed brown sheaths. Leaves linear fleshy channelled above 2½ inches long 1/10 inch wide. Flowers solitary on a short ¼ inch peduncle with a long lanceolate acute brown, ribbed bract. Pedicel terete white hairy, as long. Flower ⅕ inch long. Upper sepal oblong white pubescent, lower ones similar, prolonged at the base into a cylindric obtuse spur as long as the ovary. Petals lanceolate acuminate as long as the lip white with a purple patch on each end. Lip as long as the sepals base broad side lobes short upcurved, seed lobe large ovate obtuse fleshy, all white. Column short and broad, stelidia very short, nearly obsolete. Clinandrium deep edged with purple. Anther skull-shaped large. Capsule elliptic narrowed at the base ¼ inch long.

Singapore: Passir Panjang on trees. Flowered July 1910.

Allied to *C. cryptantha,* Ridl. differing in the long acuminate petals and very different lip.

Coelogyne casta, var. Gunong Semangkok.

This differs from the plant originally obtained in Bukit Hitam by Kelsall, in its shorter more conic thicker pseudobulbs and in its broader leaves some of which attain to a foot with a breadth of one inch and three quarters or even 2 inches, these leaves have a lanceolate outline. Other plants had leaves exactly like the type. The flowers exactly resemble those of the type but the yellow on the lip is more brilliant and the bright brown veins pass into a bright raw sienna blotch on the midlobe. The plant is very abundant at Sempang and Gunong Semangkok and is deliciously fragrant.

Coelogyne concinna, n. sp.

Pseudobulbs ovoid 4 angled apex blunt deep green closely appressed 1½ inch long ¾ inch wide slightly flattened. Leaf elliptic lanceolate acuminate narrowed at the base thinly coriaceous 6 inches long 2 inches wide 5 nerved, petiole ½ inch. Flowers 1 or 2 from the base of the pseudobulb, peduncle, 1 inch long covered with close fitting sheaths lanceolate acuminate. Bract lanceolate acute white caducous. Pedicel and ovary half an inch long. Sepals lanceolate oblong subacute greenish white 1½ inch long ¼ inch wide. Petals very narrow linear as long white. Lip 1 inch long, side lobes rounded at the tip, midlobe as long oblong rounded at the tip, keels 3, two running to the tip thick near the base minutely papillose with a double row of papillæ, median keel not papillose, disappearing in the centre of the tip, all white except the papillæ and base of middle keel orange. Column half as long as the tip white, clinandrum margin long rounded slightly toothed. Anther cap ovoid narrowed at both ends yellow.

Sumatra: Dolok Baros, Deli (coll. Moisseniac).

This pretty species was sent with other living orchids from this estate. It is allied to *C. Cumingii* but very different in form of the pseudobulbs, size of flower and the lip.

Saccolabium latifolium var. *parviflorum.*

Leaf lorate 9 inches long 1½ inch wide. Panicle 18 inches long, peduncle 10 inches, branches short and dense. Flowers hardly ¼ inch across, nearly all bright yellow, sepals margined with red, spur yellow. Callus in spur mouth broad oblong dentate with several short teeth white. Pollinia globose, pedicel narrow linear, disc rather broad oblong truncate.

Sempang: Matang Road, Taiping (Goldham).

Though this differs much in the size of the flowers from *S. latifolium,* Ridl. in which they are half an inch across and in the other points mentioned, the structure is all through so much the same that I am unwilling to distinguish it specifically.

Podochilus sumatrensis, n. sp.

Stems several erect 5 inches tall occasionally emitting lateral shoots. Leaves distichous articulate oblong, base slightly narrowed apex obtuse, minutely bilobed, half an inch long ⅛ inch through thick coriaceous shining grooved above. Racemes subterminal or axillary slender many flowered half an inch long. Bracts ovate lanceolate acuminate $\frac{1}{10}$ inch long. Ovary twice as long glabrous subterete. Flowers white ⅛ inch long. Upper sepal oblong obtuse laterals oblong ovate obtuse connate gibbous at base. Petals spathulate oblong rounded at the tip base narrowed into a claw, nearly as long, but not so wide as the sepals. Lip subtrilobed, side lobes broad involute rounded at the tip, midlobe longer rounded a rather broad double keel at the base. Column short, rostellum 3 toothed, teeth lanceolate setaceous, the central one longest. Anther cup-shaped with a long oblong straight beak. Pollinia 4 transparent aciniform much shorter than the narrow lanceolate brown gland (disc).

Sumatra: Deli Baros. Cult. in H. B. Singapore, June 1910.

Allied to *P. Zolingeri,* Rchb. f. differing in the straight not oblique sepals, broader clawed petals, and three lobed lip.

SCITAMINEAE.

Amomum cylindrostachys, n. sp.

Stems about 6 feet. Leaves lanceolate acuminate caudate glabrous, gradually narrowed to the base, 9 inches long 1¼ inch wide, sheath glabrous about 6 inches long, ligule truncate oblong papillose ¼ inch long entire. Peduncles 5 inches long covered with oblong distant sheaths an inch long or less split to the base. Spike cylindric 3 inches long 1 inch through. Bracts ovate lanceolate half an inch long, ¼ inch through green. Calyx ¼ inch long ampliate urceolate pale with three short lobes. Corolla ¾ inch long, lobes narrow lanceolate acute white. Lip 3 lobed, ⅜ inch long side lobes short rounded, midlobe oblong truncate yellow darker in the centre with 2 red marks at the base. Anther crest, trifid dark red, the central lobe very short, the laterals narrow arcuate linear curved.

Selangor: Sempang Mines track on a bank at the foot of the hill, April 1911 (No. 156).

This species is allied to *A. squarrosum,* Ridl. differing in its glabrous leaves and thinner blunter bracts.

LILIACEAE.

Dracoena robusta, n. sp.

Stem 9 feet tall and nearly 2 inches through grey. Leaves linear lanceolate acuminate acute, with broad bases 10 inches long one inch across. Bracts on base of rachis linear acuminate. Raceme unbranched stout over a foot long. Flowers in tufts of 3, with three ovate acuminate bracts as long as the pedicels ⅛ inch long, numerous rather crowded. Perianth ¾ inch long, base dilated pink, tube as long as the linear lobes apices of lobes blunt, white. Stamens shorter filaments three fourths of the length of the lobes. Anthers oblong obtuse.

Selangor: Sempang Mines track in thick forest.

This seems to be nearest to *D. Porteri* of Wallich, a common low slender shrublet usually two or three feet tall, but is very much bigger and stouter in all parts.

Pandanus globuliferus, n. sp.

A dwarf pandan of the habit of *P. parvus,* Ridl., stem ⅕ inch through. Leaves linear acuminate caudate 8 inches to a foot long, half an inch wide, margins armed with very small and slender thorns, apex narrowed, with closer set thorns, ending rather abruptly in a long setaceous thorny point 2 inches long. Syncarps solitary terminal globose an inch long with broad subtending bracts oblong cuspidate thorny, as long and ¼ inch wide. Peduncle 1 inch long. Drupes with a rounded broad top, not dilated. Style ⅛ inch long very slender spiniform. Stigma for the whole length on the lower face.

Selangor: Gunong Semangkok, at the top.

Allied to *P. collinus,* Ridl. but not bushy, leaves broader and more abruptly caudate. Drupes not dilated at the top and style much more slender.

A Botanical Excursion to Pulau Adang.

By H. N. Ridley, C.M.G., F.R.S.

The group of islands of which Pulau Adang is the largest lies to the west of the islands of Lankawi and Terutau. It consists of 3 fairly large island Pulau Adang, Pulau Rawi and Pulau Butong and a number of smaller islets.

The flora of this outlying group had never been investigated and I was glad of the opportunity afforded me by Mr. Robinson to accompany him there in the "Seabelle," in April. Leaving Kuala Lumpur on April 18th, at 5 p.m., we arrived at Penang next morning and starting again in the afternoon reached the islands on April 20th., about daybreak. The party consisted of Mr. H. C. Robinson, Mr. Seemund, Dr. Hanitsch and myself, with a number of zoological collectors and my botanical collector. We brought a motor-boat and with the aid of this and the ship's gig landed the collecting party on Pulau Rawi. The only signs of human occupation were a few coconut palms and bushes of *Justicia Gandarusa* on the shore. Mr. Robinson and I started through the woods to climb the hill. On the seashore I saw a number of plants of *Geodorum purpureum* but none in flower. The forest proved very poor as a collecting ground, consisting of a number of big trees rather scattered, and an abundance of climbing lianes, chief of which were *Agelaea vestita,* some *Menispermaceae,* a climbing bamboo like one seen at Alor Star, *Calami* and *Korthalsias.* The undergrowth was scanty, a red *Ixora* (*I stricta*) and other shrubs, *Corymbis veratrifolia,* and Aspidium polymorphum. The most striking tree was the tall *Randia exaltata* 30 feet or more high and 9 inches through. It was in flower and we felled one to secure specimens. The flowers are white spotted within the tube with black. It occurs also in Penang, Burmah and the Andamans. Returning to the shore we found the littoral vegetation consisting of *Vitex pubescens, Terminalia Catappa, Barringtonia speciosa* (very big trees with the branches curiously ringed), *Desmodium umbellatum, Stemona Curtisii,* etc. The Barringtonias bore great quantity of *Drynaria* and a pale pink flowered *Hoya* (*H. parasitica*) grew over the boughs.

Some of the Dyaks returning from collecting brought *Acanthus ilicifolius, Eulophia Keithii* and *Saccolabium miserum* with its little inconspicuous yellow and white flowers.

In the afternoon we went in the motor-boat to a bay in the eastern part of the same island. Here the steep rocks were covered with scented species of *Andropogon* which however was flowerless and only bore in place of flowers small branches of reduced leaves. Plants brought to Singapore and grown there have done the same.

A pretty slender bamboo of a new species abounded here, and flowering specimens were obtained later. *Dillenia aurea,* Sm., was in flower but as usual at that time nearly leafless. In the evening we went ashore at Pulau Butong and found *Prismatomeris albidiflora* in full flower, a beautiful little shrub *Memecylon* with charming little blue flowers and a *Bombax,* quite a small tree, in fruit. *Cordia subcordata* is abundant on the seashore here.

21st April:—We went to the bay we were in at Pulau Rawi yesterday and followed the stream up nearly to its source, pushing through the low swampy woods or wading along the stream bed. There is a patch of mangrove in the river mouth. *Oncosperma filamentosa* and a large species of *Pinanga* forming big clumps (*P. adangensis*) are abundant in the low swampy woods.

The river sandy, at the mouth becomes rocky higher up with large masses of hornblende, granite and sandstone. The flora of these rocks is rather poor considering the altitude we got to. A dwarf *Ophiorrhiza, Begonia sinuata, Podochilus lucescens* are the most noticeable plants.

The "Seabelle" moved from her anchorage in Rawi bay and picked us up at 2 o'clock and we moved on to Pulau Adang where we went on shore in a beautiful bay with a large sized stream entering it. A very big *Dracaena* about fifty feet tall and much branched with erect branches occurred here and was in fruit. It appeared to be a very large state of *Dracaena aurantiaca,* Wall., but I never before saw one so large. A single tree of *Casuarina equisetifolia* grew in this bay, and we found seedlings in Rawi bay. The tree was very abundant at the east end of the island forming a regular wood, and also on the opposite island of Pulau Nipis. These trees have a habit of growing so regularly spaced that they often quite look as if they had been planted. The sand beneath is almost bare of vegetation. From the distance of the Rawi seedlings from any adult tree and their position I am inclined to think that this plant owes its dispersal more to the sea currents than to the wind in spite of its winged seeds.

22nd April:—Mat and I with a boatman pushed up the stream which is rocky, here and there high walls of rock, and on a big rock near the top found a Begonia new to me with flowers, and *Arisaema Kunstleri,* and *Vitis discolor* and eventually reached the top of the ridge. Here were many plants of a species of *Daemonorops* none of which showed any signs of having ever flowered, but seemed to propagate themselves by layering their branches, giving us an opportunity of getting reversed rattan walking sticks. These when made up are very puzzling to those who do not know how they are produced, as the leaf sheaths point to the roots instead of away from them. The branches layer and produce a more or less clubbed end and by cutting the stem between one rooting portion and the next one can obtain a rattan in which the leaves appear to have grewn towards the root instead of away from it. The top of the ridge was dry and barren, about 1,000 feet altitude above the sea. *Curculigo latifolia,* a few Pandans and a *Hornstedtia* without flowers were the chief plants. A hermit who eats only once a year or on occasions once in three months is believed to reside here. A furious storm of rain with thunder and lightning came on when we were half way down, and we took refuge beneath a rock. On reaching the stream again, we found *Gnetum macrostachyum* in fruit and on pulling it down brought down a spray of a laurineous three new to me. *Diplerocarpaceae* and *Anonaceae,* some of the former of large size are abundant in the woods.

In the evening we went to Pulau Nipis the point of which is a sandy beach with a wood of *Casuarinas.* Here we found a curious creeping form of *Wedelia biflora* with unusually small heads. *Tournefortia argentea* (new to our flora though a common plant on the shores of many of the Malay islands), *Hernandia peltata* and *Ochrosia* in fruit. None of these at all common in our region. Besides these were *Ipomea-pes-caprae, Scoevola Koenigii, Cassytha filiformis, Ischoemum muticum, Hibiscus tiliaceus, Calophyllum inophyllum* and *Terminalia Catappa.* Behind this seashore-sand was a wood in which were a number of *Ixoras* and *Weberas,* and here we found *Pogonia flabelliformis* in leaf and flower, *Eulophea graminea,* a clump of what appeared to be *Calanthe vestita* in a decayed bough on the ground and *Dendrobium secundum.*

Next morning I went to the point of Pulau Adang where the *Casuarina* grove was to look for a sedge which Mr. Robinson had told me of and found it to be *Remirea maritima.* The ground beneath the *Casuarinas* was quite bare and the trees bore no epiphytes. The pretty lizard *Liolepis Bellii* was abundant here. Near this point *Colubrina asiatica* was common and *Capparis micracantha,* in the form of a bush, in fruit.

Returning to the "Seabelle" we steamed for Pulau Tengah, and on the way was two killer-whales *Orca gladiator,* a new mammal to peninsular waters. We reached Pulau Tengah by midday. It consists of two islands separated by a strong running shallow sea current. too deep however to wade. On landing the plant collector and I attempted to scale the main hill of the island, the top of which was clad by a forest of bananas. The forest was dense and consisted mainly of the prickly *Phyllochlamys Wallichii* and strong woody climbers with big trees interspersed. We obtained specimens of the banana which proved to be *Musa Malaccensis.* We returned to the base of the hill and walked along the coast to the north to some very high vertical cliffs. The shore was covered with boulders of laterite, slate and indurated clay. The cliffs seemed to consist entirely of this brown clay hardened into rock; at their base were screes of disentegrated clay, steep and slippery. At the base of the hill we found *Peristrophe tinctoria,* a plant I have never seen elsewhere except as a garden escape, but there were no signs of this place ever having been under cultivation. On the screes we found a new species of *Amorphophallus,* with a creamy white spadix and a green spathe. *Pleopeltis phymatodes* was very abundant. We did not find this common fern at all in the rest of the Pulau Adang group of islands. It was intensely hot and we returned to the southern shore, finding abundance of fruits of *Gyrocarpus Jacquinii,* a tree not common further south.

After collecting a little along the shore and bathing we returned to the boat and left for Kwala Malacca in the Lankawi islands, arriving off Burau bay in the evening where we anchored for the night. Next day we landed and walked up to the 7 Wells, Telayah Tujoh; a good track leads to this spot. On the way I collected a good many plants of interest, *Elettariopsis pubescens, Pteris cretica* the grey-leaved variety, a pretty new species of *Phyllanthus* of the *Reidia* section Ph., and found *Mesua ferrea* in flower.

The seven wells are formed by a stream which descending from the hill behind spreads over a wide space of smooth grey rock. In this are excavated by the water a number of basins, some of which are deep enough to bathe in, and these are the seven wells. The stream then falls over a precipitous slope. The spot is a favourite one for Malay picnics, and the water is supposed to have valuable properties and the men drank some and took bottles home with them, which made them all ill as the water is obviously not fit to drink. The view from this stream is very fine. The rugged range of Gunong Chinchang rises on one side, and on the other are hills clad in dense forest, forming an amphitheatre at the end of which is the deep blue sea. The stream at this point is about 1,000 feet above sea level.

We returned from here to Penang and then to Kuala Lumpur and so home.

The most noticeable part about the flora as a whole was its difference from that of the Lankawi islands especially in the preponderance of Malayan as opposed to southern Siamese plants. Naturally the two groups of islands being so near, there were a number of plants characteristic of the south Siamese flora as laid down in a previous paper, but there were also a number of Malay Peninsula forms, such as *Agelaea, Urophyllum, Lasianthus,* some of the *Dipterocarpeae* and *Anonaceae,* etc. The flora suggests rather an affinity with the Pulau Song-Song group of islands off the Kedah coast which contains nothing or little of the south Siamese flora. It seems too to have relations with the Andaman islands which are not at all connected with the south Siamese plants but which have a Malayan flora. On the seashores of the Adang group we have a series of plants which are absent almost entirely from the Malay Peninsula, *Ochrosia barbonica, Tournefortia argentea, Hernandia peltata,* and *Gyrocarpus.* The *Ochrosia* is only known as native in the Peninsula from a specimen said to be collected in Singapore by Wallich. It has never been seen here again. Tournefortia argentea has not been seen in our region at all, but occurs in St. Barbe isle south of Singapore and along the Malay isles to the Pacific. *Hernandia peltata* is at least rare on our coasts. Cordia subcordata too is scarce occurring in Pulau Song-Song, the Dindings and from Bintang island to the Pacific. All these seem absent or nearly so from the west coast of the Peninsula, although there are at least some suitable spots for them to grow, and quite absent from the east coast where the locality is more suitable, yet all occur in the Indian region and still more abundantly all over the Malay Archipelago to the Pacific.

DILLENIACEAE.

Tetracera assa, De C.

Pulau Rawi.

Dillenia aurea, Sm.

Pulau Rawi.

ANONACEAE.

Unona dasymaschala, Bl.

Woods, Pulau Tengah.

Goniothalamus macrophyllus, Hook. fil.

Pulau Adang.

Oxymitra glauca, Hook. fil.

Pulau Adang.

Polyalthia parviflora, n. sp.

Small tree, bark black, young parts covered with brown hair. Leaves thin coriaceous glabrous except the midrib, which is scurfy on the back. nerves about 6 pairs inarching well within the margin, 3-4 inches long, ¾-1½ inch wide, dark above, pale, shining beneath, petiole ⅛ inch long hairy. Flowers solitary axillary nearly sessile; pedicel very short hairy. Sepals ovate lanceolate half as long as the petals densely hairy. Petals spreading "white," linear oblong obtuse slightly narrowed to the tip ⅛ inch long hairy on both surfaces. Stamens very numerous oblong with a broad rounded appendage. Fruit oblong to globose ⅜ inch long, sessile, hairy at the tip when young.

Pulau Tengah; Lankawi at Kwala Malacca (Curtis 2533).

The foliage somewhat resembles that of *P. Teysmanni,* Miq. The very small hairy flower is very distinctive.

CAPPARIDEAE.

Capparis micracantha, De C.

Seashore, Pulau Tengah and Pulau Adang in fruit.

GUTTIFERAE.

Garcinia, sp.

Pulau Rawi. Big tree in forests.

Calophyllum inophyllum, L.

Pulau Nipis.

VIOLACEAE.

Alsodeia hispida, n. sp.

Branches hairy, leaves thin herbaceous elliptic acuminate; base cuneate or acuminate, margins serrate, nerves 7 pairs, slender, midrib nerves and reticulations hairy, 6 inches long, 2½ inches wide, petiole ¼ inch long hairy. Flowers in short axillary cymes, shorter than the petiole, and sessile with small ovate bracts, all glabrous. Pedicels $\frac{1}{10}$ inch long. Calyx sepals ovate acuminate pubescent, more than half as long as the petals. Petals lanceolate or elliptic, lanceolate ciliate on the edges $\frac{1}{10}$ inch long. Stamens, filament very short, anther cells elliptic, separate, connective, very large ovate acuminate, no other processes. Pistil longer bottle-shaped narrowed upwards, glabrous. Stigma discoid. Disc hairy.

Pulau Adang.

RUTACEAE.

Glycosmis pentaphylla, Correa.

Pulau Rawi.

Glycosmis rupestris, Ridl.

Pulau Tengah and Pulau Adang.

Distribution: Perlis and Kedah.

Atalantia monophylla, Correa.

Pulau Tengah.

SIMARUBACEAE.

Eurycoma longifolia, Jack.

Woods, Pulau Rawi.

OCHNACEAE.

Ochna grandis, Ridl.

Pulau Butong.

Distribution: Perlis.

DIPTEROCARPEAE.

Dipterocarpus Hasseltii, Bl.

In fruit, Pulau Butong.

Dipterocarpus grandiflorus, Blanco.

In fruit, Pulau Butong.

Vatica cinerea, King.

Common medium-sized tree on the seashore.

Pulau Rawi and Pulau Adang.

MALVACEAE.

Bombax malabaricum, De C.
A small tree in fruit. Pulau Adang.

Hibiscus tiliaceus, L.
Pulau Nipis, etc.

STERCULIACEAE.

Helicteres angustifolia, L.
Flowers pink. Dry rocks, Pulau Rawi.

Helicteres hirsuta, Lour.
With the last i Pulau Rawi.

Sterculia laevis, Wall.
Pulau Nipis.

AMPELIDEAE.

Leea sambucina, Wild.
Pulau Rawi.

Vitis discolor, Dalz.
Rocks, Pulau Adang.

RHAMNEAE.

Colubrina asiatica, Brngn.
Seashore, Pulau Adang.

CELASTRINEAE.

Salacia flavescens, Kurz.
Pulau Rawi, woods.

ANACARDIACEAE.

Buchanania acuminata, Turcz.
Pulau Nipis.

CONNARACEAE.

Agelaea vestita, Hook. fil.
Pulau Rawi.

LEGUMINOSAE.

Erythrina, sp.

A tree with large leaves in fruit. Calyx bilobed, lower lobe longer than the upper one. Pod 1 or 2 seeded, with a narrow base, then dilated at the seed-bearing portion and abruptly narrowed to a long point.

Seashore, Pulau Tengah.

Pongamia glabra, Vent.

Pulau Tengah.

Desmodium vestitum, Benth.

A shrub about 6 feet tall with mauve flowers. Pulau Butong. Previously known only from Malabar and Tenasserim.

Desmodium umbellatum, De C.

Seashore, Pulau Rawi.

Mucuna gigantea, De C.

Pulau Tengah.

Peltophorum ferrugineum, Benth.

Big tree, seashore, Pulau Rawi.

Albizzia myriophylla, Benth.

Seashore, Pulau Butong and Pulau Adang.

MELASTOMACEAE.

Melastoma malabathricum, var *appressum.*

Pulau Rawi.

Memecylon coeruleum, Jack.

Sea coasts, Pulau Rawi.

Memecylon garcinioides, Bl.

Pulau Adang.

Memecylon edule, Roxb.

Pulau Adang and Pulau Butong.

Memecylon pulchellum, n. sp.

A shrub or small tree, bark ridged longitudinally brown, twigs angled slender. Leaves rhomboid ovate gradually narrowed to both ends from the middle, obtuse at the apex, shining dull green above when dry; smooth olive green beneath, midrib depressed above, elevate beneath, nerves faintly visible, above 7 pairs, with a marginal one from the base $1\frac{1}{2}$ inch long $\frac{3}{4}$ inch wide, petiole $\frac{1}{10}$ inch long. Flowers in short dense very shortly peduncled cymes. Peduncles $\frac{1}{20}$ inch long. Bracts lanceolate acuminate. Pedicels $\frac{1}{10}$ inch long. Calyx fundus very short in flower with 4 triangular teeth suddenly subulate. Petals ovate cuspidate azure blue $\frac{1}{20}$ inch long. Stamens filaments slender bluish. Anthers curved yellowish with a conic blue spur behind. Style brilliant blue.

Pulau Adang, Rawi and Butong on the seashore. A lovely shrub when in flower with innumerable tufts of blue flowers in the axils.

MYRTACEAE.

Eugenia Scortechinii, King.

By the river, Pulau Rawi.

Barringtonia speciosa, Forst.

Seashore, Pulau Rawi.

RHIZOPHORACEAE.

Brugniera caryophylloides, Bl.

Pulau Butong.

COMBRETACEAE.

Terminalia catappa, L.

Common on the shore, Pulau Adang, Rawi. etc.

Gyrocarpus Jacquinii, Roxb.

Pulau Tengah. Also collected on Pulau Badak, by Curtis.

This does not seem to occur south of this region, in the Peninsula, the leaves and fruits are quite glabrous. The Gyrocarpus on Christmas island differs not only in the remarkable appearance of the tree but in having the leaves and fruits pubescent.

BEGONIACEAE.

Begonia sinuata, Wall.

Rocks by the stream, Pulau Rawi.

Begonia, sp.

A plant with solitary ovate acuminate leaves, on Pulau Adang. I have not seen this species elsewhere.

SAMYDACEAE.

Homalium Griffithianum, Kurz.

Tree on the sea coast on rocks, Pulau Rawi. The same small-leaved form which I got at Perlis.

ARALIACEAE.

Heptapleurum venulosum, Seem.

Pulau Sarang and Pulau Adang.

RUBIACEAE.

Urophyllum glabrum, Griff.

Pulau Nipis. A form with shoots and leaves puberulous.

Heydyotis congesta, R. Br.

Pulau Rawi.

Randia exaltata, Griff.

Pulau Rawi.
Distribution: Penang, Andamans and Burmah.

Randia fasciculata, De C.

Pulau Rawi.
Distribution: north of the Malay Peninsula.

Randia densiflora, Benth.

Pulau Rawi.

Canthium didymum, Gaertn.

Pulau Butong and Pulau Tengah.
Form with coriaceous leaves.

Prismatomeris albidiflora, Thw.

Pulau Butong.

Pavetta indica, L. var.

Pulau Adang.

Ixora multibracteata, Pears.

Pulau Adang.

Ixora Brunonis, Wall.

Pulau Adang.

Ixora stricta, Roxb.

Pulau Adang.

Psychotria stipulacea, Wall.

Common shrub in the woods. Pulau Rawi.

Lasianthus cyanocarpus, Jack.

Pulau Adang.

Webera adangensis, n. sp.

Shrub branches with white bark. Leaves variable in size ovate acuminate acute, base cuneate glabrous membranaceous drying black, nerves 6 pairs slender prominent on both sides, midrib grooved above 4 to 6 inches long 1½ inch to 2 inches wide, petiole ¼ inch long. Stipules small connate ovate obtuse. Cyme terminal nearly sessile 1 inch long and somewhat wider, glabrous, branches spreading nearly an inch long or less. Bracts lanceolate acuminate $\frac{1}{20}$ inch long. Pedicels ⅛ inch long with 2 minute ovate bracts. Calyx short $\frac{1}{10}$ inch long cup-shaped with 5 ovate lobes as long as the ovary. Corolla white ¼ inch long, tube rather thick cylindric twice as long as the calyx, with dense white hairs in the mouth, lobes oblong subobtuse, 5. Stamens exsert linear minutely mucronate. Style nearly as long or longer than the petals. Stigma cylindric clubbed, pubescent.

Pulau Adang.

Near *Webera Curtisii*, King, but with glabrous inflorescence and thinner leaves, and white stem.

Webera stellulata, Hook. fil.

Pulau Tengah and Rawi.

Webera longifolia, Hook. fil.

Pulau Tengah.

Webera insularis, n. sp.

Shrub, branches grey. Leaves thickly membranous glabrous, elliptic acuminate black and shining when dry, nerves prominent 5 to 6 pairs, 3 inches long by $1\frac{1}{2}$ inch wide; petiole rather slender $\frac{1}{4}$ inch long. Stipules lanceolate subulate $\frac{1}{8}$ inch long caducous. Cymes short 1 inch long rather compact quite glabrous, branches half an inch long. Bracts ovate acute, bracteoles lanceolate acute. Calyx $\frac{1}{10}$ inch long, tube subglobose, lobes longer lanceolate linear obtuse. Corolla tube cylindric twice as long as the calyx lobes, lobes lanceolate acuminate longer than the calyx tube $\frac{1}{8}$ inch long, mouth of tube hairy. Stamens linear minutely mucronate. Style hairy protruding for $\frac{1}{8}$ inch long. Stigma clubbed.

Pulau Nipis in sandy woods by the sea.

Nearest perhaps in some points to *W. Ridleyi*, Pears, differing from *W. Curtisii*, in its longer calyx lobes and glabrous inflorescence.

Ophiorrhiza fontinalis, n. sp.

Herb, 3 to 8 inches tall, stems usually solitary scurfy pubescent. Leaves lanceolate or ovate lanceolate thin shortly acuminate blunt, above sprinkled with short pustular hairs especially on the edge, beneath glaucous green, the nerves only scurfy pubescent. Stipules short truncate caducous. Peduncle $\frac{1}{2}$-1 inch long scurfy pubescent. Cymes $\frac{1}{2}$ to $\frac{3}{4}$ inch long, branches three about six-flowered each. Calyx short $\frac{1}{10}$ inch long; lobes very short pubescent. Corolla white $\frac{1}{4}$ inch long; tube cylindric straight lobes lanceolate acute. Fruit transversely elliptic, tips rounded, margin straight not indented $\frac{1}{8}$ inch long $\frac{1}{10}$ inch deep.

Rawi island on rocks at the upper part of the stream. Lankawi, Telaya Tujoh near Burau on rocks in the stream.

It most resembles *O. tenella* but its narrow leaves and other points distinguish it.

O. Harrisiana, var.

Pulau Adang.

Distinct from typical *Harrisiana* in its much larger leaves and more woody stem. It is over a foot tall.

COMPOSITAE.

Wedelia biflora, De C.

A prostrate form with small heads of flowers in sand. Pulau Nipis.

GOODENOVIEAE.

Scaevala Koenigii, Vahl.

Pulau Nipis.

SAPOTACEAE.

Sideroxylon ferrugineum, Hook.

Pulau Sarang and Pulau Adang.

EBENACEAE.

Maba buxifolia, Pers.

Pulau Sarang and Pulau Adang.

Diospyros flavicans, Hiern.

Pulau Rawi.

Diospyros Wallichii, King and Gamble.

Pulau Rawi and Pulau Adang.

APOCYNACEAE.

Holarrhena densiflora, Ridl.

In long grass on rocks on Pulau Rawi.
Distribution: Setul.

Ochrosia borbonica, Gmel.

Pulau Nipis.

ASCLEPIADEAE.

Marsdenia volubilis, Cooke.

Pulau Tengah.

Hoya parasitica, Wall.

On trees by the sea, Pulau Adang.

Dischidia nummularia, Br.

Pulau Butong.

Dischidia benghalensis, Colebr.

Pulau Rawi.

BORAGINEAE.

Cordia subcordata, Lam.

Pulau Butong.

Tournefortia argentea, L. f.

Pulau Nipis.

Distribution: Ceylon, Nicobars, Mauritius, Malay Islands, and Polynesia.

CONVOLVULACEAE.

Ipomaea campanulata, L.

Pulau Tengah in fruit only.

Ipomaea pes-caprae, Roth.

Pulau Nipis.

ACANTHACEAE.

Acanthus ilicifolius, L.

Pulau Rawi.

Eranthemum porphyranthos, Clarke.

Seashore in sandy spots. Pulau Butong, Pulau Adang and Pulau Tengah.

Gymnostachyum insulare, n. sp.

Herb about 2 feet tall, glabrous. Internodes long 3 inches. Leaves lanceolate acuminate at both ends, herbaceous, 7 nerved, 7 inches long 2½ inches wide, petiole slender 1 inch long. Panicle lax, terminal, branches short to 2 inches long. Bracts linear acuminate $\frac{1}{20}$ inch long. Pedicels $\frac{1}{10}$ inch long, in flower, twice as long and thicker in fruit. Calyx lobes lanceolate acuminate as long as the corolla tube $\frac{1}{8}$ inch long. Corolla tube short and thick, little longer than the lobes, limb $\frac{1}{4}$ inch across pubescent. Upper lip bilobed with 2 equal oblong lobes rounded at the tip. Lower lip with 3 rounded lobes of which the centre is the widest. Stamens 2, filaments exsert. Anthers oblong 2-celled. Cells equal and parallel, no appendage. Style longer, stout, apex decurved. Capsule not flattened terete, an inch long borne on a thickened lengthened stem; the base of the calyx swollen globose. Sepals persistent retinacula, oblong with a rounded apex, yellowish flat, obscurely reticulate $\frac{1}{8}$ inch long.

Rawi island.

Allied to *G. magnum,* Clarke, of Tampin Hill in Malacca, differing in its lanceolate glabrous leaves, (those of *G. magnum* being scurfily pubescent in the midrib and nerves beneath.)

Justicia gendarusa, L.

Pulau Rawi.

Justicia inconspicua, n. sp.

A tall slender weeding straggling herb, internodes often as much as 3 inches long, nodes swollen, scurfy pubescent with appressed hairs. Leaves large lanceolate acuminate membranaceous, acute, base cuneate, aequilateral or nearly so at the base, 5 inches long $1\frac{1}{2}$ inch across, nerves 7-8 pairs elevate beneath and inarching within the margin, glabrous, except the nerves which are pubescent. Small opposite leaf, ovate obovate $1\frac{1}{4}$ inch long, $\frac{3}{4}$ inch wide or less, petiole inch long. Cymes axillary subterminal 1 inch long. Peduncle slender half the length. Bracts minute linear subulate hairy. Calyx lobes linear setaceous $\frac{1}{10}$ inch long. Corolla half an inch long; tube as long as the calyx lobes, upper limb lanceolate narrow, lower limb broad widely 3-lobed, lobes oblong, laterals incurved, median broader, blunt, white. Lower lobe purple. Stamens exsert; anther cells brown, unequal, one above the other, appendage rather large, white, ending in a broad hook.

Rawi island in shady woods by the sea beach, (5899). Also collected in Pahang in 1891.

I took this for the imperfectly described *J. alternifolia,* Clarke, but that is described as having markedly unequal-sided leaves.

Peristrophe tinctoria, Nees.

Pulau Tengah. Apparently really wild here.

VERBENACEAE.

Premna trichostoma, Miq.

Pulau Adang.

Vitex pubescens, Vahl.

Pulau Rawi.

APETALAE.

NYCTAGINEAE.

Deeringia celosioides, R. Br.

Pulau Tengah.

LAURINEAE.

Cassytha filiformis, L.

Pulau Nipis. A fascinated form.

Hernandia peltata, Meissn.

Pulau Butong.

EUPHORBIACEAE.

Euphorbia atoto, Forst.

Pulau Adang.

Cleistanthus trichocarpus, Ridl.

Pulau Rawi and Pulau Adang.

Breynia Keithii, Ridl.
Pulau Adang.

Aporosa aurea, Hook. fil.
Pulau Rawi.

Baccaurea lanceolata, Muell.
Pulau Rawi. Tree. Fruit bright red.

Antidesma Moritzii, Muell. Arq.
Pulau Rawi.

Gelonium bifarium, Roxb.
Pulau Adang.

Microdesmis casearifolia, Hook. fil.
Rawi island. A common tree.

Phyllanthus (*Reidia*) *glaucifolia,* n. sp.

Shrub with slender branches. Leaves ovate lanceolate acuminate acute; base rounded or very shortly narrowed, membranous above green beneath glaucous, more or less oblique, nerves fine inconspicuous 5 pairs, 4 inches long 1½ inch wide, petiole 1/10 inch long. Male flowers minute in numerous small clusters of racemes on the lower part of the branches below the leaves. Racemes 1/10 inch long densely clad in ovate acuminate pink bracts on one side. Pedicels hair-like pink. Perianth rose pink, lobes 4 oblong fimbricate. Stamens 4 connate truncate. Female flowers on the leafless ends of the branches solitary in the axils of two lanceolate acuminate bracts. Pedicels 1¼ inch long filiform. Perianth lobes ⅛ inch long triangular lanceolate green fimbriate. Capsule smooth pale green half an inch long.

Rawi island by the banks of the stream.

The smooth grey backs of the leaves gives this plant a striking appearance. The little racemes with their dense mass of closely appressed bracts are also curious.

URTICACEAE.

Phyllochlamys Wallichii, King.

Pulau Tengah, forming much of the undergrowth. A small-leaved form on Pulau Nipis.

Balanostreblus ilicifolius, Kurz.
Pulau Adang.

Ficus parietalis, Bl.
River, Pulau Rawi.

Ficus globosa, Bl.

Rocks. Pulau Adang.

Ficus retusa, L.

Pulau Rawi.

Ficus saxophila, Bl.

Pulau Rawi. More hairy on the stalks than usual.

CASUARINEAE.

Casuarina equisetifolia, Forst.

Seashore, Pulau Adang and Pulau Nipis.

GNETACEAE.

Gnetum macrostachum, Hook. fil.

Pulau Adang.

CYCADACEAE.

Cycas Rumphii, Miq.

Pulau Butong and Pulau Rawi, attaining a height of 20 feet.

MONOCOTYLEDONES.

ORCHIDEAE.

Dendrobium eulophotum, Lindl.

Pulau Rawi. Common all over the Malay Peninsula.

Dendrobium lamellatum, Lindl.

Pulau Rawi.

Dendrobium secundum, Lindl.

Pulau Nipis.

Bulbophyllum macranthum, Lindl.

Pulau Rawi, on a tree across the river. Also at Telayah Tujoh, Lankawi. Common all over the Peninsula.

Calanthe vestita, Lindl.

Plants of what appeared to be this found on a fallen bough on Pulau Nipis.

Eulophia Keithii, Ridl.

Pulau Butong.
Distribution: Siam as far south as Alor Star.

Geodorum purpureum, Br.

Seashore in Pulau Rawi.

Luisia brachystachys, Bl.

Rocks on Pulau Rawi.

Saccolabium miserum, Ridl.

Common on rocks at Pulau Rawi.

Podochilus lucescens, Bl.

On trunks of trees, Pulau Rawi.

Corymbis veratrifolia, Thuar.

Woods, Pulau Rawi.

Pogonia flabelliformis, Lindl.

Sandy woods at Pulau Nipis.

SCITAMINEAE.

Elettariopsis pubescens, Ridl.

River bank on Pulau Rawi. Also on the track to Telayah Tujoh, Lankawi.

Musa Malaccensis, Ridl.

Pulau Tengah. Abundant in the upper part of the island.

TACCACEAE.

Tacca cristata, var minor.

A very small form. Woods, Pulau Rawi.

AMARYLLIDEAE.

Curculigo latifolia, Dryand.

Woods on top of the hill, Pulau Adang.

ROXBURGHIACEAE.

Stemona tuberosa, Lour.

Seashores at Rawi.

Distribution: Siam and Cochin China to the Dindings and Pahang.

LILIACEAE.

Peliosanthes parviflora, n. sp.

Leaves lanceolate acuminate at both ends, acute 10 nerved, base decurrent to the petiole 7 inches long 2¼ inches wide, petiole 6 inches long. Scapes 4 inches long covered to the base with lanceolate acuminate papery bracts the lower ones ¼ inch long. Flower solitary or two in the axils. Pedicel about as long as the bract. Perianth tube shorter than the lobes, limb $\frac{3}{16}$ inch across, lobes oblong ovate obtuse blue green. Staminal ring fleshy elevated above the mouth of the perianth tube, attached to the ovary only at the base. Stamens subglobose white bilobed. Ovary half inferior. Style stout free, stigma capitate.

Rawi island, in fruits, April 1911.

Nearest perhaps to *P. stellaris* but with larger leaves, stamens completely connate and flower smaller with broader blunter perianth lobes. One specimen has the inflorescence bifurcating.

Dracaena aurantiaca, Wall.

A very large form attaining a height of about feet and much branched, in fruit Pulau .

Dracaena congesta, Ridl.

Pulau Tengah.

PALMAE.

Areca triandra, Roxb.

Woods on Rawi island.

Pinanga adangensis, n. sp.

A tall palm making large clumps, stems 23 feet tall 1½ inch through, stout yellowish tinted red. Leaves 5 feet long, leaflets linear acuminate with a broad decurrent base 20 inches long 1 inch wide, apical pair connate at base toothed, 8 inches long and 2 inches wide; not glaucous beneath. Spathe from below the leaves oblong 7 inches long 3 inches wide edges keeled. Spadix six-branched the largest branch 7 inches long; rachis flexuous hardly flattened ⅛ inch thick. Flowers distichous. Male flowers, calyx very small, sepals ovate. Petals triangular ovate cuspidate falcate ¼ inch long. Stamens 20, filaments very short. Anthers oblong obtuse. Female flower sepals and petals orbicular ovate acute, subequal. Fruit (unripe) obovoid half an inch long slightly narrowed at the base.

In wet swampy woods on Pulau Rawi.

Near *Pinanga malaiana,* Scheff., but the rachis of the spadix is much more slender, and flattened, and the female flowers are smaller.

Oncosperma filamentosa, Bl.

Woods on Pulau Rawi.

Caryota mitis, Lour.

Pulau Rawi.

Licuala spinosa, Roxb.

Pulau Rawi.

AROIDEAE.

Arisaema Kunstleri, King.

On rocks, Pulau Adang.

Amorphophallus viridis, n. sp.

Tuber elongate cylindrical. Leaf petiole 9 inches tall green, lamina about 18 inches across, leaflets elliptic, rather abruptly acuminate acute, decurrent below, 4 inches long, 1 inch wide, about 4 pinnae to the lamina. Peduncle 12 inches tall. Spathe 4-6 inches long apple green, cleft nearly to the base, limb oblong rounded at the tip 4-5 inches long, 1 inch wide. Spadix shorter. Appendage slender cylindric obtuse 3 inches long, creamy white; male portion ¾ inch long, flowers small irregular cream-coloured with a wavy violet margin. Female flowers about 20 yellow. Drupes 1-2 seeded oblong or subglobose ¼ inch long, red. Seed ovoid or subcordate.

Pulau Tengah. In loose screes of fallen dusty clay, and also on the seashore.

Near *A. variabilis,* Bl., but the oblong green spathe limb distinguishes it.

Colocasia gigantea, Hook. fil.

Woods, Pulau Rawi.

CYPERACEAE.

Fimbristylis asperrima, Vahl.

Pulau Rawi on rocks overlooking the sea the typical form, and also another form with very narrow grassy leaves.

Common all over the Peninsula.

Mapania tenuiscapa, Clarke.

Pulau Rawi woods far up the stream.

Remirea maritima, L.

Seashore at Pulau Adang.

Scleria lithosperma, Willd.

Pulau Butong.

Carex indica, L.

Pulau Rawi, rocky woods by the sea.

GRAMINEAE.

Panicum latifolium, Sw.

Pulau Rawi.

Oplismenus compositus, Beauv.

Dry woods, Pulau Adang.

Ischaemum muticum, L.

Seashore, Pulau Nipis.

Andropogon, sp.

Habit of *A. nardus* and faintly scented. No flowers seen the inflorescence being replaced by branches of leaves. Very abundant on the rocky slopes in the small bay of Pulau Rawi.

Thuarea sarmentosa, Pers.

Seashores, Pulau Adang and Pulau Nipis.

Schizostachyum insulare, n. sp.

Stems about 3 inches through, 20-40 feet tall. Leaves lanceolate acuminate with a long point; margins of the denticulate base narrowed cuneate, 12 inches long $1\frac{1}{2}$ inch wide, petiole channelled $\frac{1}{4}$ inch long. Sheaths ribbed, ligule, of long bristles $\frac{1}{4}$ inch long. Inflorescence over a foot long of 5 or 6 spikelets crowded with tufts; tufts an inch apart, with lanceolate bracts at the base, half an inch long and $\frac{1}{4}$ inch wide. Spikelets an inch long. Empty glumes at base 2:—I, ovate keeled mucronate $\frac{1}{8}$ inch: II, lanceolate keeled mucronate, margins at the top bristly $\frac{1}{4}$ inch; III, elongate lanceolate mucronate very bristly at the tip; IV, elongate narrow lanceolate, apex slightly bristly. Palea lanceolate convolute. Filaments slender connate. Anthers linear long, not penicillate 4. Ovary narrow subcylindric. Lodicules oblong with a rounded tip, brown pubescent.

Pulau Rawi.

Near *S. latifolium* but the leaves are thinner, and narrowed to base, the filaments connate, anthers 4.

Schizostachyum dumosum, n. sp.

A slender erect bamboo, with hollow stems $\frac{1}{8}$ inch or more through; internodes over 6 inches long smooth. Leaves lanceolate acuminate, base broad, slightly narrowed at the extreme base 6 inches long, $\frac{3}{4}$ to 1 inch long, margins scabrid, petiole $\frac{1}{10}$ inch long, ligule none, a black edge to the sheath only marking it. Inflorescence terminal 2 feet long, slender, with tufts of slender branches 6 inches long or less from the nodes. Spikelets in tufts about half an inch long, crowded. Bracts papery ovate about $\frac{1}{8}$ inch long. Spikelet $\frac{1}{4}$ inch long $\frac{1}{10}$ inch through acuminate. Glume I:—ovate minutely cuspidate 4 ribbed. Glume II:—ovate lanceolate 6 ribbed half as long again. Glume III:—longer lanceolate. Glume IV:—elongate lanceolate distinctly cuspidate. Flowering glume 1 paleaceous. Stamens 3. Filaments connate. Anthers brown dehiscing only at the top, ovary beaked with a long conic acuminate beak, hairy. Style filiform red brown. Stigmas purple feathery fairly long.

Rawi island on a dry rock, face of the island forming dense thickets, the stems usually short 6 or 7 feet but sometimes much longer.

FILICES.

Trichomanes javanicum, Bl.

Pulau Rawi and Pulau Butong.

Trichomanes parvulum, Poi.
Not in fruit. Pulau Adang.

Davallia solida, Sw.
Pulau Adang.

Adeantum Capillus-veneris, L.
Pulau Rawi, Pulau Butong and Pulau Tengah.

Aspidium polymorphum, Wall.
Pulau Rawi.

Nephrodium pteroides, Retz.
Pulau Adang.

Pleopeltis phymatodes, L.
Pulau Tengah.

Pleopeltis sinuosa, Wall.
Pulau Rawi.

Niphobolus adnascens, Sw.
Pulau Adang and Pulau Tengah.

Drynaria quercifolia, L.
Pulau Adang.

Vittaria elongata, Sw.
Pulau Adang.

Vittaria lineata, Sw.
Pulau Rawi.

Antrophyum reticulatum, Kaulf.
Pulau Rawi.

Gymnapteris contaminans, Wall.
Pulau Adang.

Polybotrya appendiculata, Willd.
Pulau Rawi.

LYCOPODIACEAE.

Selaginella pinangensis, Spring.
Rocks, by the River Rawi.

Selaginella, sp.

*The Malacca Sultanate

BY

The Hon'ble R. J. Wilkinson.

Alone among Malayan townships Malacca may claim to be regarded as ancient and sedate. Singapore is no older than the lifetime of a man, and Ipoh has won its notoriety within the memory of a boy; while Malacca is historic. Her centuries are few, but they are full of achievement, and there is very little local glory in which she does not share. By the Portuguese conquerors she was named *la famosa*, "the Renowned:" she is linked with the memory of Camoens, Albuquerque and St Francis Xavier, and stands for whatever is medieval and romantic in a country that is lacking sadly in veneration and romance.

But there have been many Malaccas; and the oldest of all—that of six centuries ago—was a petty village of Sea-Sakai or Orang Laut, a fishing-hamlet of no fame and no importance. A humble beginning, perhaps, for so great a name; yet there are times when it is well to be obscure and when meekness may inherit the earth. The third quarter of the fourteenth century was one of these occasions. The greatest local power of that day, the Javanese empire of Majapahit, decided suddenly to play a leading part in history and to take a high place among the conquering nations of the world. It sent out its fleets, swept down on the thousand-year-old Malay kingdom of Palembang, and overthrew it utterly. It destroyed Palembang's daughter—the town of Singapore—with a massacre so cruel that for centuries afterwards the memory of that colony's awful fate was enough to deter any Malay from settling on the island. It broke the rising power of Pasai, the first seedling of a Muhamadanism which was destined at a later date to overthrow Majapahit itself. It harried Langkasuka (Ligor), and left that ancient Indo-Chinese kingdom—older even than Palembang itself—to fall an easy prey to the advancing armies of Siam. The wars of 1370 to 1380 A. D. effaced all that was then ancient and historic in Malaya. But, as for Malacca, what was there in a street of shanties and a fleet of dug-outs to attract the conquering arms of Majapahit?

So Malacca was spared to become a refuge and a shelter for the homeless people of the stricken towns, men of Hinduized Singapore and Palembang, Moslems from Pasai and Buddhists from the North. The little aboriginal fishing-village of 1370 A. D. had become a cosmopolitan trading-port in 1403 when it figures for the first time in the records of contemporary nations. The town in those early days was a walled or stockaded cluster of huts upon St. Paul's Hill; and right in the heart of the place there was built a wooden godown or store in which goods were warehoused for safe keeping pending the arrival of a trading coaster or junk. The currency was tin; the trade was in tin, resin, and jungle-produce. The local Chief, a Hindu by faith, styled himself *paramisura* or king, but a few years later he became a Muhammadan and took the name of "Sultan Muhammad Shah, the Shadow of God upon Earth." He was a keen man of business and made at least one voyage to China in pursuit of his own ends.

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*Reprinted from the 'Singapore Diocesan Magazine', August 1911, pp. 7—11, by kind permission of the Author, and of the Editor, the Rev. Frank G. Swindell.

Almost all the present Sultans of Malaya—outside Selangor—claim descent from the Paramisura who reigned over the godown on the slopes of St. Paul's Hill. To this day, when the casual visitor walks from the landing-steps to the Stadthouse he can see on the slopes of the hill a weird image that an expert will tell him is a Makara, a monster of Hindu mythology, the sole surviving relic of the time when the Ruler of Malacca was still a Hindu. Among the regalia of one of the Peninsular Sultans he may also look upon a silver seal, a reputed relic of the Paramisura's later years since it bears the name of the "illustrious Sultan Muhammad Shah, God's Shadow upon earth." But the courtly genealogists of our Malayan princely houses do not stop at Muhammad Shah; they trace his pedigree through a long line of earlier kings, rulers of Singapore and of Palembang, to Chosroes the Great, King of Parthia; to Alexander of Macedon, King of Rome; to Darius and Artaxerxes, Kings of Persia; to Jamshid and Kai Kaius and Kai Kubad, Kings of Romance; as far as Kaiomerz, "son of Adam and elder brother of Seth," for it is to Seth that the meaner branches of humanity owe their origin. But The Paramisura himself knew nothing of this; he was not a genealogist; he had an eye for realities. He went submissively to China with his tribute of tin and jungle-produce, accepting in return raiment embroidered with dragons or unicorns, girdles of precious stones, gold and silk and paper money. One quaint old piece of embroidery in the ownership of a modern Peninsular Sultan seems to date back to the time when the Ruler of China honoured the Paramisura with dragons of gold and gems.

The line of trader-princes did not die with Muhammad Shah. His son, Iskandar Shah, paid two visits to China, one in 1414 and the other in A. D. 1419. Iskandar Shah died in A. D. 1424 and was succeeded by "Sri Maharaja," otherwise Ahmad Shah, another merchant-king. In the days of its poverty, Malacca had been a village of mean huts served by humble dug-outs, but the visits of the great Chinese junks made it grow into a trysting-place for the traders of the Eastern seas. Whole colonies of strangers flocked to the port from Java, from Burma and even from distant Madras. Suburbs sprang into existence. Bandar Hilir began as a Javanese settlement; so did Kampong Upeh (Tranquerah); the Tamils and the Burmese had also quarters of their own. St Paul's Hill was merely the citadel, the heart of Malacca, the abode of the Sultan and of his Malay nobles, the ruling centre of the town. But the days when the Sultan attended personally to business were over: a new generation of Malay princes had sprung up, eager for fame and wealth yet averse to labour: greedy of glory but not of the risks of war. The toll levied on the trade of the port enabled the Sultan to send out armed bands of hooligans who forced the little hamlets on the coast to bow to the dominion of Malacca. This was the second Malacca the imperial city of Mudzafar Shah and Mansur Shah (1445-1470 A. D.) the old Malayan Empire at the very height of its greatness when it ruled over Pahang, Kampar, Siak and Indragiri.

What was it like, this chief among Malayan cities of the year 1460 A. D.? The old primitive semi-aboriginal village of the Paramisura had been swept away; it had known no houses except dug-outs, and no luxuries except matting, in the making of which the women excelled. The new Malacca lacked its modern hinterland of rice-fields and orchards; it was still a thin line of houses stretching along the sea and river front. But the line was longer than before and the character of the houses had changed with the character of the town. The place swarmed with adventurers from all parts of the East. In its stories we read of Afghan swashbucklers; Indian jockeys and mahouts; Kling warriors who—after the manner of their kind—advanced when the enemy retreated and retreated when the enemy advanced; and men of religion from Arabia, sometimes genuinely pious, sometimes merely hypocritical, but always thoroughly unpopular. Indeed such a cosmopolitan seaport town was no place for the practice of the meeker virtues. We read of a government, stern, severe and corrupt; of municipal surveyors who induced the Sultan to decree that a street must be straight in order that they might be bribed to certify to the straightness of the crooked; of judges who took presents from one side on the clear understanding that they were not to be blamed if they took presents also from the other; of the election of a prime minister by the simple process of setting all the candidates in a row and letting the Sultana say "choose Uncle Mutahir." In such a city of the strong no weak citizen was really free; every man sought a patron, the mightier the better, for it was better to pay toll to one chief than to many. Thus it came about that the greater nobles lived in walled enclosures amid the huts of their own followers and slaves. There at least they were safe from the irresponsible bravoes who levied blackmail for themselves by asserting falsely that they came in the dreaded name of the King. At night every enclosure was bolted and barred against the intrusion of thieves, trespassers and illicit lovers; and even policing was unpopular since it exposed the patrolling minister of police to the risk of finding his sovereign in places where the Sultan did not want to be met. For in this city where every other law was broken daily there was one rule that was kept inviolate: no man, whatever his wrongs, dared lift his hand against the King.

It was a strange feeling, this loyalty of the ancient Malays. A man might murder a hero or saint, or betray a relative or friend, or abduct an innocent girl: if he did it in the interests of a royal intrigue it was a noble act of self-sacrifice according to the ethical code of the day. And strangest of all was the spirit in which tyranny was met. The chief of the King's Ministers, the "Uncle Mutahir" to whom allusion has been made, had so much love for a favourite daughter that he kept the report of her beauty from reaching the ears of the Sultan lest she should become the victim of his caprices. The girl married her cousin. The Sultan came later to a knowledge of the truth. He slew the girl's husband and carried her off to his palace; he slew the girl's father and all her family; he sent men also to carry off the wealth of the house. Yet when the dying "Uncle Mutahir" saw his own indignant son destroying property rather than let it reward the iniquity of the tyrant, he stayed him: "Is the Sultan to be impoverished and my death to profit him nothing?" Even a protest against royal ingratitude had to be driven home by self-sacrifice. A Malay noble who had grown grey in his ruler's service and had risen to be War Minister and Commander-in-Chief once saw an enemy's fleet approaching and felt that resistance was vain. He said little. He drew up a list of the few gifts that he had received from his master in the course of his long years of work—a plate or two of chipped china and a pot or two of worn brass—and sent the list, emphasizing its poverty and meagreness, with a farewell letter of thanks to the donor. The King was profuse in his penitence. But the old man would take no further reward: he named the spot at which he was destined to die and went down to meet death for a cause that he saw was lost and a master whom he knew to be worthless. Conduct of this sort was ideal loyalty, as the Malays of the time understood it.

Such loyalty degrades a royal caste. The self-made early princes of Malacca, the Paramisura and his son, were men of business and intelligence. The conqueror-kings, Mudzafar Shah and Mansur Shah, were men of ambition. But the later Kings of Malacca, born when the wealth had been acquired and the ambition realized, were gloomy, capricious and jaded tyrants who found more interest in destroying than in building up. Sultan Mahmud Shah, the last of the Malacca rulers, was a *roi fainéant*. He plundered, and violated; but he was wise enough to leave all the real work of administration to his Ministers. Foremost among them was the Bendahara who was destined to so tragic an end; next came the Bendahara's son Tun Hasan, Minister of War, and the Laksamana Hang Nadim who commanded the fleet. Even at this distance of time when we read the cold commentaries of the Portuguese and the gossiping tolerant anecdotes of the Malay Annals we can feel that these three ministers were men of unusual character: the eldest, the Bendahara, calm, self-contained, temperate and cautious; the two younger men, passionate perhaps and hot-headed, but gifted with an energy and a persistence that is rare among men born under the sun of the equator. And Malacca needed them; for it was just when these three men were at the height of their authority that the town was startled by an unexpected and most ominous apparition—the first European fleet that ever sailed into its harbour. That was in August, 1509; the Admiral was the Portuguese, Diego Lopez de Sequeira.

*The Capture of Malacca, A.D. 1511.

BY

The Hon'ble R. J. Wilkinson.

In an age accustomed to the comfort of modern sea-travel it is not easy for a writer to convey more than a faint academic idea of the hard lot of the first-comers to the Eastern Seas: the leaky ships, the stifling cabins, the stale unpalatable food, the putrid water, the dirt, the overcrowding, the scurvy, the danger of storms, the discomfort of the steamy tropical calms, and the anxiety of approach to an uncharted and hostile coast. Yet if we are to take the measure of men like d'Almeida and d'Albuquerque we must try at least to realize the task that was set before them. Columbus and da Gama had been simple navigators who staked their lives upon their skill and upon the truth of their geographical beliefs. The first "Viceroys" were men of another type, men who dreamed dreams and saw visions of empire in the seemingly hopeless plan of pitting the small frail ships of Portugal against the untamed vastness of the Indian Ocean and against the teeming millions who inhabited its shores. D'Almeida was the apostle of Sea-Power. He saw that with all their apparent weakness his ships had at their mercy the commerce of whole continents; and he preached the doctrine of a supreme navy. Alfonso d'Albuquerque disagreed. He was a veteran and distinguished soldier, a man of authority, who believed in Sea-Power but not in its all-sufficiency. He mocked at the theory of an Eastern empire that owned no ports or docks and could not caulk a ship except by the favour of an ally. He was the apostle of the Naval Base, sea-power resting on the shore. Moreover, as a man of ancient lineage, cousin to Spanish kings, himself a knight of the Order of Christ, he would not take service under Francis d'Almeida.

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*Reprinted from the 'Singapore Diocesan Magazine', November 1911, pp. 8—13, by kind permission of the Author, and of the Editor, the Rev. Frank G. Swindell.

King Emmanuel put an end to the quarrel by naming both the disputants Viceroys and by giving each of them a fleet and a separate sphere of authority. This was in 1508. To another adventurous spirit, Diego Lopez de Sequeira, the King gave an independent command, a squadron that was to operate outside the waters of India and Africa and to bring new oceans under the sea-power of Portugal. These last were the ships that cast anchor at Malacca on that fateful 1st August, 1509.

As soon as the fleet was anchored a boat put off from the shore to ask in the name of the Bendahara who Sequeira was and why he came. Sequeira had brought an Arabic letter from King Emmanuel to the Sultan of Malacca; he asked permission to deliver it along with the gifts that went with such epistles. He was forced to wait. His arrival was an event of the first magnitude to Malacca; was it wise to begin relations of which no man could predict the end? So thought the Bendahara. The Sultan saw no harm in reading a letter and receiving gifts that committed him to nothing; he overruled his minister. A Portuguese named Teixeira was sent ashore and was conducted on an elephant to the palace, where he had the desired audience of the King. It is not difficult to picture the scene: the crowds outside who mobbed Teixeira in their inquisitiveness; and the silent staring faces that lined each side of the long palace-gangway up which an envoy was expected to make his way, with many halts and ceremonious bows at every few feet of the passage and every step of the dais. Teixeira was a stranger to Malay etiquette. He presented his letter with a sailor's jovial cordiality, and in a burst of further friendliness he fastened a necklace of beads round the neck of the Bendahara, just as though that minister was an African Chief who would glory in such tinsel. An angry murmur followed the Portuguese as he fumbled with the sacred person for the first noble in the country. "Let him alone: heed him not; he is only a mannerless boor", said the Bendahara. Teixeira's bold and blustering assurance was intensifying the nervousness, the fear of the Unknown, that chilled every heart in Malacca.

The days passed. No man dared attack the strangers; yet no man ventured to befriend them or trade with them, for who could foresee the end? The Indian merchants were anti-Portuguese to a man; they knew what trade-rivalry meant. The Bendahara saw that the strangers would be far less tolerant of oppression than the Indians whom they wished to supplant; in the interest of trade he preached a holy war against the infidel. The warriors of the city were discreet. They were to get the hard blows of the war, and the Bendahara the pickings of the trade; they elected to arm and wait. No one in fact wanted to fight. Sequeira had come for customers. He waited, hoping that the Malays would appreciate his pacific policy, but he could gain nothing by delay: it was the one thing that the Malays desired. Sequeira grew impatient, then petulant, then menacing; the monsoon was slipping by and he could wait no more. Even at this stage, war was not what he wanted, nor did it suit the Malays. A situation of extreme delicacy is always fraught with dire peril; and in this case the accidental (or semi-accidental) firing of an alarm-gun on a Protuguese ship led to hostilities over some petty mistake. The fighting was half-hearted but it spread. The Malays on board the Portuguese ship jumped into the sea; such European sailors as happened to be on shore were seized and captured. Teixeira saw the error when too late. He was too weak to attack the sullen angry city that had now broken off all relations with him; the monsoon was dying away; his ships were sadly in need of repair; and in the end he had to sail home having tarnished the fame of his country and left his luckless comrades at the mercy of their foes.

According to Malay ideas the Bendahara was the leader of the resistance to Sequeira. He had done no fighting; indeed he had done nothing at all; but a statesman who achieves stupendous results by the simple process of inaction is a man who deserves better of his country than the hero of a hundred costly fights. So thought the people; so, doubtless, thought the Bendahara himself. The Sultan thought otherwise. He saw that "Uncle Mutahir" was becoming far too great a personage; and he recalled many old grievances against his minister. There was the avuncular wealth to be garnered; and there was that little matter of the Bendahara's daughter which had never been explained to His Highness's proper satisfaction. His Highness sent two of his followers to summon the Bendahara "to God's presence" as they politely put it. The Bendahara bowed his head and died. The men of his household died with him; his daughter was carried off to the harem of the Sultan; and his riches were dissipated in festivities at the wedding of the Sultan's daughter to the son of the Ruler of Pahang. Suddenly in the very midst of all this wassail the King's joy was turned into bewilderment by the unexpected reappearance of the Portuguese fleet—this time in overpowering strength under the Viceroy d'Albuquerque himself.

As soon as King Emmanuel had heard of the disaster to Sequeira he had sent (March, 1510) three ships under Diego Mendez de Vasconcellos to avenge the defeat. These ships sailed first to India to consult with d'Albuquerque. The great Viceroy was too expert a commander to weaken his forces by dispersing them into detachments; he detained Vasconcellos depending the complete subjugation af Goa and the organization of the naval base in India. Then when all was ready in the early Summer of 1511, d'Albuquerque sailed out to attack Malacca with every ship and soldier that he could muster. On the 1st July, 1511, he appeared in the roads with the entire force of Portuguese India,—nineteen ships, 800 European soldiers and 600 native sepoys,—with trumpets sounding banners waving, guns firing, and every demonstration that might be expected to create a panic among the junks in the harbour and the warriors in the town.

The effect was immediate. The ships in the harbour—Chinese junks and Gujerati trading-vessels—tried to sail away, but were intercepted and brought back to their moorings with every show of friendship. They then offered to join the Viceroy in the attack on the town, but this offer was declined with thanks; the Portuguese admiral could afford to bide his time. Meanwhile the Malays and the Sultan were too dumbfoundered to act; no boat put out from the shore, no message was sent. By the following morning, however, the Sultan, regaining some of his old assurance, sent a boat to greet d'Alduquerque and to say that the wicked Bendahara who had instigated the attack on Sequeira had been punished with death for all that he had done. D'Albuquerque replied, expressing his gratification, but pointing out that the Portuguese prisoners had not been released, and that pending their release the town must be regarded as accessory to the attack on Sequeira. The Sultan was now in a dilemma. He realized that he could not keep the prisoners without removing his mask of friendliness, nor could he release them without giving up his hostages for the security of the town. He tried the Bendahara's policy; he temporized, But d'Albuquerque was no Sequeira. He knew that any general attack would be the signal for the death of his fellow-countrymen; still, risk must always be taken. He entered into secret into secret communication with Ruy d'Aranjo who was the leader among the captives and his own personal friend. Ruy d'Aranjo spoke of divided counsels in the city, and advised attack. The Viceroy continued to feel his way. He seized some of the shipping and sent a few shots into the town. Then he waited. The hint was taken; Ruy d'Aranjo was released.

The Vicorey was now in a stronger position. He went on to ask for a heavy indemnity and for permission to open a permanent trading-station at Malacca. The Sultan demurred; he might have allowed the factory but he was quite unable to spare any money for the purpose of buying off the Portuguese. Meanwhile the war-party in the town was coming slowly to the front. It was headed by the Sultan's son Alaedin, by the Prince of Pahang, and by the young bloods of the place whe knew nothing of war and were eager for the fame that it brings. The Sultan himself preferred peace and quiet. He thought he could secure what he wanted by letting the Portuguese and the war-party oblige each other with the necessary quantum of fighting; as for himself he was a peaceful person who cared for none of these things. He told the Viceroy that he was poor and anxious for friendship, but quite unable to meet the demands that were being made upon him.

D'Albuquerque began now to prepare for war. He knew his own mind and had a definite policy: that of substituting a Portuguese for a Malay government and leaving the foreign traders undisturbed. He gave the Javanese and Indian leaders assurances to that effect and received their promise of neutrality in return. In the matter of local knowledge he was well served by the fact that Ruy d'Aranjo and the other prisoners had spent two years in the town and had come to know the locality, the language, and the foreign merchants. Still the task before him was a hard one. In those days the channel of the Malacca River turned sharply to the right after reaching the sea and allowed ships to lie at anchor off the mudbanks on which the houses are now built. Disembarkation on those mudbanks was impossible; the key of the position was the landing-place at the mouth of the river and at the foot of St. Paul's Hill, but unfortunately for the Portuguese this point lay beyond the reach of the covering-fire of their ships' guns while it was exposed to the fire of every Malay stockade and building in the vicinity. The Viceroy tried to grapple with the difficulty by building a sort of armed raft or floating-battery which could float in shallow water and be moored at the mouth of the river so as to silence the Malay gun-fire and cover the landing of the troops. The battery was a failure. It grounded in the wrong place was exposed to a very heavy fire, and was only saved from capture by the heroism of its commander, Antonio d'Abreu who stuck to his post though wounded grievously. At last d'Albuquerque was compelled to attack without the help of any artillery to cover his advance; he sent out a strong force, cleared the landing-place of the enemy's troops by a sudden rush, and then forced up the floating-battery to a more commanding position where it made short work of the Malay defences. This advantage was not secured without heavy loss; for after the first surprise of the first Portuguese attack the Malays had rushed together from all quarters and had made a most desperate onslaught upon the landing party which they endeavoured to throw back into the sea. The prince Alaedin, mounted on an elephant, headed this charge in person; and the Portuguese lost 60 men before it was repulsed. This success and the destruction of the Malay defences encouraged the Portuguese to follow up their advantage by an attack upon the mosques and palaces on St. Paul's Hill, but the Malays were numerous and were fighting under cover while the Viceroy's troops were bewildered by the confused mass of building and were driven back with heavy loss. So ended the day. The Portuguese had cleared the landing-place; and that was all.

The crowning attack took place on St. James'Day, the 24th July, 1511. The Viceroy landed troops again under cover of the guns of his floating-battery but when once they had come ashore they were charged by a wild mob of 700 Malays and mercenaries under the Prince Alaedin in person. The fight was long and furious; and though it put the Portuguese to heavy loss it could only end in one way: armour, superior weapons, discipline,—everything was on their side. The Malays retreated once more to the shelter of the buildings that had served them so well on the previous day. This time d'Albuquerque advanced with more caution; he burnt the buildings as he went along. The work was slow and cruel, for the defenders shot down poisoned arrows upon the attacking Portuguese, who were burdened with the weight of their armour, and exhausted by the heat of the sun and by the fire and smoke from the burning houses. Again and again, with diminishing forces, did the Prince Alaedin lead out his men in sudden rushes and win momentary success, only to be repulsed in the end. So too, now and again from the upper reaches of the river, did the Laksamana Hang Nadim send down his war-canoes or fireships to take the enemy in the rear or harass his communications—all to no avail. Night separated the combatants; and the Portuguese retreated to their ships, saddened by their heavy losses and by their consciousness that the work of destruction was only half accomplished.

On the following day the Viceroy disembarked his men once more and proceeded with every precaution to assail the smoking ruins that had covered the resistance of the last two days. He found no one to oppose him. Prince Alaedin and his Laksamana had retreated up the river and were awaiting attack at Pagoh on a battlefield of their own choosing. The Prince of Pahang had gone back to his own country as the fighting had lost all attraction for him. The Sultan had seen the burning of the palace and was not sure that his policy of lazy neutrality would justify him in meeting the Viceroy face to face; he removed himself with all possible despatch beyond the reach of any Portuguese marauding party. The aged bedridden Bendahara who had succeeded the murdered Mutahir was borne off in a litter by his loving relatives while he invoked curses on the cowardice of a generation that was not as the warriors of his youth. The Malay power was broken. The Javanese, Burmese and Indian merchants were for peace at any price and hastened to make their submission to the Viceroy, and, as an earnest of their goodwill, helped him to dislodge the Prince Alaedin from his chosen lair at Pagoh. The prince fled far away; a few scattered bands of outlaws represented all that was left of the famous Malay empire of Malacca.

The Old Cemetery on Fort Canning, Singapore.

With a plan and four plates.

By H. A. Stallwood.

This register of tombs in the Old Cemetery on Fort Canning was compiled by order of Government on the suggestion of Mr. C. B. Buckley who, in his "Anecdotal History of Singapore" mentions the loss of the register and suggests that a new one should be compiled.

No trace of the old register—for it must be assumed some such record existed—can be found, and it has therefore been considered desirable to make as complete a record as possible of the names of those old residents and visitors whose remains have found a resting place in this sacred spot.

The Cemetery stands on the slope of Fort Canning Hill, and is approached from the South by Fort Canning Road, through a gateway designed partly in the Gothic style of Architecture. It was opened in 1822 to take the place of the first Christian Cemetery which was situated close to where the flag-staff at Fort Canning now stands. It was closed when the Cemetery in Bukit Timah Road was opened in 1865.

The Southern half of the ground was allocated to Members of the Anglican community, and the Northern half to those of other Christian denominations, the dividing line being marked by a wall.

The grounds are kept in order by the Public Works Department, and, apart from any interest in the place as a graveyard, the beautiful shaded walk offers an attraction to those who appreciate quiet, contemplative surroundings.

To those who feel an interest in Singapore and its history, few places in the Settlement offer so much of interest. Many old residents lie buried here, and many tombstones testify to the number of lives sacrificed by members of the Civil Service, who were called to rest at a very early age, whilst taking their share in the administration of this Settlement, of which we are all so proud. The United Services also yield their *quota* of names, unfortunately, some well-known, if not illustrious, in the annals of their country.

The oldest tomb discovered is that dated 1821, erected to the memory of John C. Collingwood of the ship "Susan" A 30. It is surmised that this stone was taken from the old original Cemetery and re-erected here, as this Cemetery was not opened until 1822. The latest discovered is dated 1868, erected to the memory of Marie Dominica Scott, (B 229) a child of only two years of age, and the interment presumably took place after the Cemetery was closed in 1865, as the parents were possibly interred here.

Near the Southern gateway in the East side stands a monument erected by Captain the Hon: Arthur A. Cochran C. B. and Officers of *H.M.S.* "Niger," to the memory of their Comrades who fell in action, died of disease, or were drowned in the exercise of their duties:—

Other graves of interest are those of:—

A 13. Hon: F. L. C. Edward Presgrave, Civil Service, and the Rev. Robert Burn, late Chaplain of this Settlement. Both lie buried in the same vault.

A 26. Captain William Scott, who was Harbour Master here, and one of the most respected residents of his time. He was a cousin of Sir Walter Scott. Scott's Road is named after him, where he owned some property.

A 55. Stephen Hallpike, one of the earliest Settlers in Singapore.

A 63. Commander William Maitland, of *H.M.S.* "Spiteful" who died on board in the Roads at Singapore. A tablet to his memory is on the wall of the Cathedral.

A 134 The Hon: Charles Robert Lindsay, second son of the late Earl of Balcarres.

A 191. James Henry Leopold Grey, son of the late Hon: Edward Grey, late Bishop of Hereford.

A 216. Thomas Moncrieff, fifth son of the late James Wellwood Moncrieff, one of the Judges of the Supreme Court of Scotland.

B 6. Sir Jozé D'Almeida Carvalho E'Silva, Portuguese Consul-General in the Straits Settlements, one of the most prominent of the old Singapore pioneers. He was knighted by the Queen of Portugal in 1842 on his appointment as Consul-General. His portrait is in Raffles Library.

B 14. George Doumgold Coleman, Superintendent of Public Works. He was responsible for laying out many of the main roads, and designed the first St. Andrew's Church. Coleman Street and Coleman Bridge are named after him.

A. 163. Captain Leslie, also Superintendent of Public Works in this Settlement.

C. 80. John Colin Campbell, second son of the late Sir Guy Campbell, Bart; who died on board *H. M. S.* "Bittern."

A. 264. Monument erected by the Captain, Officers and Ships' Company of *H. M. S.* "Spartan."

The tombs are mostly constructed of brickwork, plastered, and can boast of no architectural beauty. Many have fallen into disrepair; others are fast decaying and tumbling down. In many cases the inscriptions are illegible, though cut in granite, as they have been left unattended, and have had to give way to time and weather. The inscriptions cut in marble have stood well and can be very easily deciphered.

Every care was taken in compiling the register, which was a work of some difficulty, and, though errors may have crept in, it will be found, on the whole, to be fairly complete.

For the translation of the inscriptions on the tombs of Chinese residents who lie buried here, I am indebted to the Hon'ble C. J. Saunders, Secretary for Chinese Affairs, who has kindly supplied me with the following notes:—

> "The inscriptions on the Chinese tombs were carefully deciphered as far as possible by Mr. Yung Sz Meng, my clerk and interpreter, who copied the inscriptions in Chinese. He has also helped me in transliteration and translation. In cases in which the grave does not give the birthplace or place of origin of the deceased, it has been assumed that he was a Tiechiu."
>
> "The Christian names gave some difficulty and I am indebted to Mr. Go Lai Quee, of the Supreme Court, for interpreting many of them. In graves B. 24, 25, 67 and 101, I have had to content myself with giving the Chinese sounds."
>
> "The gravestones, as is customary with the Chinese, often mention the names of those who erected the stone: it has thus been possible to give the information as to the relatives of the deceased which is found in column 3."
>
> "The names of prefectures and districts in China are given in Romanised characters: the names of smaller localities are given in Chinese characters. Where it is possible and necessary, the tribe ('bangsa') of the deceased is given in brackets."
>
> "No English-Chinese calendar is available for the years before 1834, and for years up to 1833 the month and the day are therefore given according to Chinese reckoning. Where the year of an event is alone given, or where the event happened in the 11th moon and no day is given, it is impossible to say in which of two years according to Western reckoning the event happened. The Chinese year is often given not by the year of the Emperor's reign, but merely by the characters of the 60 years cycle, and in a few cases (*e.g.* B. 34) in the absence of evidence as to the deceased's age at death, it would be impossible to say whether he died *e.g.* in 1798 or 1858, if we did not know that at the former date the Cemetery was not open. In a few cases the graves give dates according to the Western calendar."
>
> "Most of the graves in Section B., two of the graves in Section D. and one grave in Section C. had at the top four Chinese characters meaning 'May Eternal Light shine on him (or her)' with a cross or a cross in a circle in the middle of the inscription."

The accompanying plan shows all tombs and graves, but those without inscriptions, or with illegible ones, have been omitted from the following list. This accounts for the gaps in the consecutive numbering.

It is hoped that on the publication and distribution of this register descendants and relatives of those buried in the Cemetery will come forward and assist in the repair of the ruined tombs and thus prevent the total decay and destruction of the monuments which form so interesting a link with the past.

Section A.

(The number refers to the number on plan).

No.	Name	Description	Born	Died	Age
1	Napier, James Brooke	Infant son of William Napier Esq. Lieut: Governor of Labuan, died at sea on board H.M.S. "Meander."		17 Feb. 1848	5 mos. 24 days
2	Sweeting, Samuel			30 Sept. 1830	22 yrs. 16 days
3	Davidson, R.R.D.			28 June 1831	
4	Cuthbertson, Robert John	Late Deputy Master Attendant of this Settlement		1 Dec. 1830	36 yrs.
7	Black, John	Of Montrose N.B. Assistant Surgeon Bombay Army		Sept. 1830	32 yrs.
9	Scott, Harry	Eldest son of Robert Scott Esq., of Prince of Wales' Island		3 June 1830	32 yrs.
11	Behn, August Wilhelm	Son of August and Caroline Behn	16 Nov. 1850	21 Sept. 1851	
12	Burn, Emily Caroline	Infant daughter of the Rev. Robert Burn	18 May 1832	1 June 1832	
12	Oxley, Elleanor Amelia	Fourth daughter of Thomas and Lucy Caroline Oxley		1 Nov. 1845	5 yrs. 1 mo.
13	Presgrave, Edward	Hon. F.L.C. Civil Service, Singapore		12 Mar. 1830	35 yrs.
13	Burn, The Rev. Robert	Son of Major-General Andrew Burn, Late Chaplain of this Settlement	18 April 1799	17 Jan. 1833	
14	Church, William Marryat & Brother	Children of Mr. & Mrs. Church of Singapore			

No.	Name	Description	Born	Died	Age
14	Green, George	Seaman of H.M.S. "Raleigh" (*Note :* This tablet apparently belongs to some other tomb)		4 Oct. 1837	
15	Montgomerie, Margaret	Children of Dr. William Montgomerie & Elizabeth his wife		3 Apl. 1837	2 yrs. 4 mos.
	,, Robert Alexander			3 Apl. 1837	1 yr.
	,, Alexander Graham			17 Nov. 1840	1 yr. 4 mos.
16	Pickering, Mary Eliza			3 Mar. 1863	
19	Hewetson, T.			14 May 1853	50
20	Hewetson, W.			6 Aug. 1842	42
22	Hewetson, Mrs. Marian			10 Nov. 1828	30 yrs. 2 mos.
23	Leicester, Miss Mary			1 June 1831	8 yrs.
25	Saunders, Eliza Wallace	Wife of Robert Saunders Esq. of the Bengal Civil Service		27 Sept. 1829	28 yrs.
26	Scott, William	Eldest son of the late James Scott Esq. of Penang, one of the first Settlers of that Island	3 May 1786	18 Dec. 1861	
28	Hogg, Lucy	Wife of Charles Hogg Esq. of Calcutta and daughter of the late Ralph Marshall of Calinifercy in the Co. of Kerry, also Mary Ann her Infant child who died on the evening of the same day		14 Sept. 1827	22

No.	Name	Description	Born	Died	Age
29	White, The Rev. Edward M.A.	Chaplain of the Bengal Establishment		7 Apl. 1845	52
30	Collingwood, John C.	Commander of the Ship "Susan"		21 Nov. 1821	42
34	McSwiney, Mrs. Anne	Wife of D L. McSwiney Esq., also Ellen her Infant daughter died 25th June 1829 aged 8 days		1 Nov. 1833	33
35	Hewetson, Charlotte			8 Mar. 1854	62
41	McMahon, M. J. T.	Of the B. C. S.		8 Oct. 1831	23
47	Temperton, William	Shipwright		25 May 1829	50
49	Graham, Jane	Wife of Thomas Henry Graham, Assistant Surgeon on the Bombay Establishment		15 July 1831	22
53	Davis, Robert Thomas Farquhar	Third son of Captain Davis, Garrison Staff of this Settlement		24 June 1826	15 mos. 11 days
54	Deare, Diana	Wife of Mr. Conductor W. Deare of the Ordnance Department, also her infant son Walter Miller died Jan. 10 1844 aged 2 months and 22 days		2 Nov. 1843	33 yrs. 4 mos.
55	Hallpike, Stephen	One of the earliest inhabitants of this Settlement		21 June 1844	56
56	Cornish, Frederick George	Bengal Civil Service youngest son of George Cornish Esq. of "Salcombe Regis" in the Co. of Devon.		27 July 1828	19

No.	Name	Description	Born	Died	Age
57	Smart, Edward			31 Oct. 1843	29 yrs. 5 mos.
62	Scott, Joseph Richard	Commander of the H.E.L. Coy. War Steamer "Phlegethon" son of the late Capt. R. R. Scott nephew of the late Colonel Hopetoun Scott C.B., born in Calcutta	27 Apl. 1798		46 yrs 9 mos. 2 days
63	Maitland, William	Of the house of Balgreggan Captain of H.M.S. "Spiteful"		10 Aug. 1846	40
65	Tomb. No inscription, broken slate tablet on top, Shepperd, William	A. B. of H. M. S. Camrian		31 Jan. 1845	20
66	Whitehead, Horrocks	For many years a Merchant of Singapore		Sept. 1846	36
67	Ter-Stephen, Mercatoon Michael			10 April 1856	65 yrs. 3 mos 2 days
68	Tomb in disrepair; no inscription Stone lying near Smith, Chas: Ed:			July 1824	30
69	De Silva, Januario Agostinio	Portuguese (unable to decipher)			
73	Lahy, Thomas	Also Robert John his son died 5 Nov: 1828 aged 3 years		17 June 1827	29
78	Melitus, Philip Paul	Born at Madras	3 Aug. 1831	23 July 1860	

No.	Name	Description	Born	Died	Age
84	Mackertoom, Mackertoom Galoost			2 July 1864	39 yrs. 9 mos.
85	Howard, Peter	of Preston in the Co: of Lancashire, England, second son of John Howard of the same place, Attorney at Law, and Hannah his wife who died at Singapore		9 Feb. 1845	26
86	Bing, Johanna Catherine	Wife of A. C. Bing		17 Dec. 1862	31
92	Sarkies, Aristakes	A respectable Armenian Merchant		8 Mar. 1841	63
93	Mundy, Thomas	Late Commander of the Steamer "Braganza." Died on his way to Ceylon from the effects of an accident		22 April 1845	31
94	Williams, John	Seaman lately belonging to H. M. S. "Wellesley"		May 1840	28
	Hudson, Thomas			May 1840	22
	Watson, Edward			May 1840	26
95	Seth, Hosannah Peter	Born at Madras	2 Aug. 1817	21 June 1863	46
96	Seth, Gregory	An Armenian		14 Feb. 1825	47
100	Stephens, Simon			12 Jan. 1849	47
101	Apcar, Andrew Satoor			30 Sept. 1834	25
102	D'Silva, Martina	(Remainder illegible)			
103	Inscription in Russian				

No.	Name	Description	Born	Died	Age
105	Sarkies, T. A.			17 Jan. 1829	41
109	Edwards, John	Late Seaman of the Barque "Arab."		29 Sept. 1837	41
110	Perreau, Charles			26 Oct. 1861	50 yrs. 9 days
113	Sinclair, Henry			29 April 1838	36
117	Gray, William	Merchant		24 Dec. 1832	
118	Henderson.	Captain of the Ship "Renown."		8 Mar. 1833	
127	Nicholson, George W. N.		10 Dec. 1838	17 May 1862	25 yrs. 5 mos 7 days
128	Nicholson, William David	Also his Sister Elizabeth Caroline died 16 Aug. 1845, age 16 years		19 Aug. 1845	20
129	Nicholson, George	Also his wife Louisa died 17 May 1853 aged 50		8 Sept. 1853	69
131	Rowlandson, Emily Jane	Wife of Lieutenant George Rowlandson of the Madras Artillery		27 Dec. 1835	20 yrs. 8 mos 20 days
132	Brabazon, Harry Lambert	Brevet Captain Bombay Artillery, only son of Captain William Brabazon for many years Master Attendant of the Hon. E. I. Co. at St. Helier		22 May 1842	31

No.	NAME	DESCRIPTION	BORN	DIED	AGE
134	Lindsay, The Hon'ble Charles Robert	Second son of the late Earl of Balcarras. A member of the Bengal Civil Service		4 July 1835	48
136	Margaret, Caroline Regina				4 yrs. 11 mos. 14 days
138	Farquhar, William Clark	Eldest son of the late Andrew Farquhar		13 Mar. 1848	22 yrs. 7 mos. 23 days
140	Leslie, George	Commander of the Ship "Good Success."		26 May 1845	
142	Diron, Mary	Wife of W. M. Diron, Esq. B. C. S. eldest daughter of R. H. Tulloch B. C. S. of Elliston Roxburghshire late of the B. C. S.		21 April 1838	25 yrs. 9 mos.
143	Prior, Hester Sophia	Wife of Capt. Henry Prior of the Madras Army		8 Feb. 1834	26
144	Armstrong, Adam	Native of Scotland—Shipwright		30 Jan. 1865	29
145	Ferrier, James	Commander of the Barque "Arab." Also his son Robert, Salter Ferrier died 25 Oct. 1833, aged 15 years		19 Oct. 1833	72
147	Jarret, Thomas			29 July 1842	32
148	Dean, Mrs. Matilda C.	Wife of the Rev. Wm. Dean, also the Infant son of Dr. W. B. & Mrs. E. R. Bradley		5 Mar. 1835	22

No.	Name	Description	Born	Died	Age
149	Reynell, Walter	Son of Captain and Mrs. Henry Reynell		31 July 1845	2 yrs. 9 mos. 11 days
150	Clark, James Scott	Infant son of James Scott and Elizabeth Clark	7 Dec 1834.	20 Mar. 1835	3 mos. 13 days
151	Rogers, Capt. F. H.	Of Beverley Mass. U. S. A. Born at Portland, M.	26 Jan. 1804	24 Feb. 1845	
152	Clark, James Scott	Son of David Clark of London		25 Dec. 1851	47
153	Stryker, The Rev. Isaac P.	Missionary to the Island of Borneo from the Ref. Prot. Dutch Church in North America, born in the State of New Jersey	27 Nov. 1811	27 Mar. 1842	
155	Germon, Lieut. I. P.	48th Regt. M. N. I.		29 Dec. 1836	26
156	Ivatts, Emily	(Indecipherable)			
157	Simon, Juliet, A.			9 July 1844	13 mos. 6 days
158	Rodyk, Christian J.			21 Oct. 1832	36 yrs. 8 mos.
159	Steer, W. H.			23 Oct. 1832	
160	Bernard, Mrs. Esther	Wife of Francis James Bernard of Singapore		14 July 1832	41 yrs. 10 mos.
161	Loch, James	Of Brompton, Middlesex	3 Feb. 1798	19 July 1838	

No.	Name	Description	Born	Died	Age
162	Haakman, Herman Jacques, Lucretia	Of Amsterdam	7 Mar. 1857	1 June 1864	
163	Leslie, Captain	13th Regt. Supt. of Public Works		31 May 1842	
164	Jauncey, Robert	Of Dartmouth, Devon.		9 May 1838	23
165	Hind? Wm. Henry	Died on his way from China		28 Aug. 1863	27
166	D'Silva, Mrs. Joaquina			27 May 1837	37 yrs. 3 days
167	Leisk, Mrs. Anna	Wife of W. C. Leisk		11 April 1864	55
172	Secretan, Francis James	Of Ampanam in the Island of Lombock		18 May 1864	42
174	Schumann, Edward	Of Hamburg		18 July 1863	21
176	Wilson, James			25 Aug. 1848	11 yrs. 7 mos. 15 days
177	Robertson, Archibald James Spottiswoode	Second son of Mr. John H. and Mary Ann Robertson	28 Jan. 1863	3 Feb. 1865	
178	Reid, Jane Elizabeth	Wife of John Fleming Martin Reid Esq., of the Bengal Civil Service		25 July 1838	37 yrs. 11 days
181	Schneider, Capt. Paul			10 Mar. 1865	
182	Shepherd, John Forbes	Late of the Bengal Civil Service, son of John Shepherd, Esq. of London.		10 Sept. 1842	19

No.	Name	Description	Born	Diee	Age
183	Lyon, James	Commander of the ship "Bomanjee Hormusjee" of Bombay		22 Sept. 1841	40
184	Breen, John Edward		4 Apl. 1807	12 July 1837	
186	Weed, Joseph Harvey	Of Rockingham, Vermont, U.S.A.		25 June 1848	32
188	Webster, Josiah			4 Nov. 1863	44 yrs. 5 mos. 24 days
189	Crowell, Seth	Late Commander American Ship "Robin Hood"		19 July 1851	35
190	Plowden, Elizabeth Anne	Wife of George Chicheley Plowden of the Bengal Civil Service		31 July 1838	22
191	Grey, Leopold James Henry	Bengal Civil Service, son of the Hon. Edward Grey, Bishop of Hereford		10 Aug. 1845	30
192	Mitchell, The Rev. J. A.	(Inscription indecipherable)			
194	Wood, Martha Maria	Wife of the Rev. George W. Wood and daughter of Silas Johnson Esq. of Morris Town N. J.		9 Mar. 1839	21
195	Woods, John Henry	Son of R. C. Woods Esq.		2 Oct. 1846	10 mos. 19 days
197	Mathers, Henry	Of Belfast, Ireland		22 Jan. 1845	20
198	Anderson, William		1 June 1842	17 Feb. 1865	
199	McTavish, Capt. Archibald	Late of the Steamer "Armenian" born at Garthbeg, Invernesshire	8 Aug. 1835	21 June 1862	

No.	NAME	DESCRIPTION	BORN	DIED	AGE
200	Sutcliffe, Ada		30 Ap. 1863	19 Oct. 1865	
202	Bray ? Jane	Wife of Ernest Bray ?			
204	Pillay, Aaron			25 Feb. 1847	56 yrs 11 mos. 25 days
206	Gable ? Mary	Wife of John Gable ?			
208	Decamp, Eugene	Born at New Jersey.	12 Jan. 1838	11 June 1863	
209	Sohst, John Friedrich	Born in Hamburg	Ap. 1842	Nov. 1863	
212	Francis, John Henry	Chief Mate of the British Ship "Chilo" died on board. Third Son of William Skeggs Francis of "Belle Grove" near Welling in the Co. of Kent, England.		28 Ap 1862	
213	Rose, Emily Carey				12 mos. 5 days
214	Hartley, Henry	Son of Stephen Hartley		Dec. 1844	47
215	Robb, J. Rioch	Wife & Son of Daniel Robb, Ship builder of Singapore		18 Feb 1865	2
	Robb, Ann			22 Feb 1865	38
216	Moncrieff, Thomas	Of Shanghai, China, 5th son of Sir James Wellwood Moncrieff Bart: one of the Judges of the Supreme Court of Scotland.	5 Oct. 1820	22 Dec. 1863	
217	Peterson, Edward Alfred	Second son of P. A. Peterson		6 Sep. 1860	16 yrs 9 mos. 17 days

No.	Name	Description	Born	Diee	Age
218	Leicester, Rosamond	Wife of Mr. W. S. Leicester		25 Aug. 1860	39
220	Paterson, Alice Graham	Daughter of William Paterson, Merchant of Singapore		25 Nov. 1852	10 mos.
222	Kraal, William			29 Nov. 1844	1 day.
	Kraal, Wilhelmina			15 May 1847	28 days
223	Kraal, Amelia	Wife of W. Kraal		11 Jan. 1853	35 yrs 10 mos. 8 days
224	Tolson, Robert P.		27 Jan. 1861	19 Dec. 1863	
225	S. and E. S.	(Inscription illegible)			
227	McIntyre, Hugh			4 July 1860	32
230	Bell, Kate	Child of James A. and Ellen F. Bell		23 June 1847	7 days
232	Haskell, G. L.	Merchant of Boston U. S. A.		15 May 1860	35
233	Caswell, Elizabeth	Relict of the late James Caswell of New South Wales		4 Nov. 1859	52 yrs 4 mos.
234	Neubronner, Eliza Esther	Wife of Jas: L. Neubronner & daughter of the late James Caswell Esq. of New South Wales		6 June 1862	35 yrs 10 mos.
235	Geale, Janet	Wife of Edward Geale M. M.		11 Sept. 1859	51 yrs 5 mos.
237	Taylor, Francis	Wife of Mr. R. Taylor, Ordnance Officer, Singapore		24 May 1857	46 yrs 3 mos.

No.	Name	Description	Born	Died	Age
238	Armstrong, John	Merchant		24 Aug. 1852	51
	Mactaggart, Mary Ann	Daughter of John Armstrong and wife of William Mactaggart, Merchant		21 June 1856	21
239	Carpenter, Mary Elizabeth	Wife of Percy Carpenter		17 May 1857	
240	Salmon, John Kinsey	Born at Holywell		25 May 1855	60 yrs 4 mos. 21 days
241	Lovi, (?Love) Henry	Born at Edinburgh	1804	12 Apl. 1856	
242	Burnett, William	Son of Samuel Burnett		16 June 1854	54 yrs 2 mos.
	Burnett, Joseph	,, ,,		20 June 1854	13 mos. 6 days
	Burnett, Catherine	Wife of Samuel Burnett		4 Aug. 1854	34 yrs 1 mo.
243	Moyle, Mary Harriot	Wife of John M. Moyle		18 Jan. 1858	43 yrs 20 days
244	Moyle, Edith Elizabeth	Eldest daughter of J. M. & E. G. Moyle		30 Dec. 1864	4½ yrs
246	Dunn, Arthur Charles	Son of Charles and Emma Dunn		27 Apl. 1854	8 mos.
247	Carroll, The Rev. C. R. M.A.	Chaplain to the Forces at Hongkong		2 Sept. 1853	
248	Ellis, John K.	Late of Helston, Cornwall		10 June 1858	27

No.	Name	Description	Born	Died	Age
250	Ottoson, Emily Lousia			11 Nov. 1852	4 yrs 9 mos. 6 days
252	Robinson, Stella	Children of Philip and Emma Robinson	29 May 1857	1 Apl. 1860	
	Robinson, Alice	do.	9 May 1861	18 May 1861	
253	Song Pat Ko	Of Lam-Che" (Hokkien)			
	Fu Kin Hi	Of Yun-thin (Kheh)			
254	Mactaggart, Elizabeth Helen	Daughter of William and Elizabeth Mactaggart	8 Dec. 1858	14 Oct. 1859	
255	Curties, Charles J.			5 June 1860	51
256	Copeland, James T. (M. M.)			24 July 1860	34
257	Skinner, Ann Jones	Wife of Archibald Skinner		25 Oct. 1863	34
258	Clement, William	Barque "Hydrosse"		22 May 1859	37
59	Cumming, John Purss	Merchant of Singapore born at Forres, Scotland	8 Mar. 1815	24 Sept. 1858	43
260	Siffken, Charles Henry	Son of Henry Jacob and Amelia Louisa Wilhelmina Siffken of London, England, formerly of Lisbon		14 Nov. 1858	21
261	Dawson, Capt. Wm.	Of the British Barque "Cornwall"		27 July 1858	47
262	Tingate, Thomas W.			22 July 1853	47
263	Spottiswoode, Charles	Merchant of Singapore	21 Dec. 1812	13 June 1858	

No.	Name	Description	Born	Died	Age
264	The Captain, Officers and Ships' Company of H.M.S. "Spartan"	Erected to the Memory of their deceased Shipmates			
267	Macnair, Robert Frederick			15 Mar. 1857	5 yrs
	Macnair, George			5 Oct. 1857	8 mos.
268	Corbett, Joseph			21 July 1857	10 mos.
269	Muirhead, Emma Jane	Only child of David and Maria Anne Muirhead		10 Aug. 1857	
273	Khus, Maria Catherina Sophia				8 mos. 21 days
275	Mellington, Elizabeth			12 Aug. 1859	8 yrs. 1 mo. 18 days
276	Skinner, A. W.	Infant son of A. Skinner, M. M.		3 Sept. 1859	13 mos.
277	Kirby, John Laurence	Son of John Lawrence and Margaret Kirby		19 Feb. 1850	

Section B.

No.	Name	Description	Born	Died	Age
4	Paulo Lim		19d. 12m. 1778	27 July 1855	
	Tan Moh	His wife			
6	Sir Jozé D'Almeida Carvalho E'Silva	Knight Commander of the Portuguese Order of Christ and Conception and Knight of the Order of Charles III of Spain. Member of the Privy Council of Her Most Catholic Majesty Queen Donna Maria II. Portuguese Consul-General in the Straits. Born at St. Pedro do Sul in Portugal. Resident 25 years in Singapore	27 Nov. 1784	17 Oct. 1850	66
7	DeAlmeida, Angelina	Daughter of Francisco, Evaristo Pereira and Isabel De Almeida	18 Apl. 1862	21 May 1863	
8	Demee, Maria	Wife of Demee and daughter of the late Sir Jozé D'Almeida		28 Aug. 1851	30
9	D'Almeida, Julia	Daughter of the late Sir Jozé D'Almeida		13 Mar. 1852	20
11	Cunningham, Mary Ann	Of Dublin, Ireland. Widow of the late Mr. Cunningham		1 Feb. 1864	64½
12	Martin Chung Sin	Of Ka-Yin-chu (Kheh) husband of Maria	2d. 1m. 1791	10 Feb. 1851	61
14	Colemar, George Doumgold	For many years Supt. of Public Works in this Settlement		27 Mar. 1844	
16	Connolly, John			24 Mar. 1846	65

No.	Name	Description	Born	Died	Age
17	Cox, Thomas Bernard	2nd Lieut: Madras Artillery		16 Feb. 1843	19
18	Pestana, Catherine	Widow of the late A. A. Pestana, Born at Malacca	28 Jan. 1842	26 Aug. 1861	19 yrs. 6 mos. 21 days
20	Cunningham, John Thos:	Son of Mr. D. Cunningham		18 Nov. 1838	11 mos
21	Neville, Patrick Joseph	Stepbrother of W. C. Cunningham	6 Jan. 1825	6 June 1858	33 yrs 5 mos.
22	Cunningham, Mathew Peter		3 Oct. 1832	22 Feb 1860	
23	Crosby, Thomas Kidder	Born in England	6 June 1811	15 Sep. 1840	
24	Pedro Chûa Ngi An	Father of Paulo and 'Hok-tek-Seng'	12d. 10m. 1801	15 June 1853	
25	Tan Kò Hien	Of 菴埠柯隴鄉 Hai-yê^{n} (Tiechiu) in front of "Jit-seng" pawnshop father of Lai-Khò		20 Aug. 1854	
27	Rodrigues, Julia	Wife of Josè Manoel Rodrigues, born at Malacca	7 April 1843	1 Aug. 1862	
28	Francisco Tan Nam	Uncle of Anton a-Kui		7 Feb. 1858	47
29	Rozario, W. E. Petronell	Wife of Jozè Rozario Born at Malacca	3 Oct. 1784	16 Sep. 1868	
30	Paulo Li Ji	Grand-uncle of Ngnan Ho		2 Dec. 1857	48
31	Hendriks, James			17 Oct. 1852	23
32	Hendriks, John			30 Aug 1862?	30
33	Anton Yong Ngi Ku	Of Ka-yin-chu (Kheh)	30d. 9m. 1823	14 Nov. 1850	28

No.	Name	Description	Born	Died	Age
34	Joseph Yong Kim Long	Of Ka-yin-chu (Kheh)	11d. 10m. 1798 [?1858]	6 Sept. 1863	
35	Ignacio Yeô^{n} Chhiong Ngi	Of 龍溪菴埠小石鼓鄉 Hai-Yė^{n} (Tiechiu)		1 Feb. 1851	
36	Pedro Cheng	Father of Paulo, Pedro, Andrew, Joseph, Catherine Anna, Lucia and Anna		18 June 1860	50
37	Joseph Lau Hong Liat	Father of Lai Siong		24 May 1855	
38	John Chng a-Toe				
39	Tiû^{n} Ui Lok	Father of Stephen Tiû^{n}	5d. 8m. 1793	30 Jan 1853	
40	Paulo Lau Chhun			27 July 1863	
41	Stephen Chng Beng Bun				
42	Vincentio Lau Tsu	Of 房洞鄉 Hai-Yè^{n} (Tie-chiu) father of Alexio Lau a-Lai		15 May 1851	
43	Paulo Só a-Piu	Of San-Keng District (Canton) uncle of Mathias Ho (Fuk ?) who repaired the grave on 13 July, 1842			
44	Joseph Tiû Ngi	Of 山斗鄉 Jao-Pheng (Tiechiu)	1819-20	21 April 1251	
45	Thadden Tiu^{u} Tao	Of 南桂都 Hai Ye^{n} (Tiechiu)		26 Jan. 1853	
46	Cunegonde	Mother of Joseph Lai Kok and (Lu) cia(?) Gok-niu^{n}	8 Nov. 1834 11 p.m. 1 a.m.	13 Dc. 1852 9-12 p.m.	
47	Joseph Lau Kate (?) Li				
48	James Tan a-Bin		1801-2	5 May 1850	

No.	Name	Description	Born	Died	Age
49	Stephen Tan		11m 26d 1792 (?16 Jan. 1852	3 Mar. 1852	
50	Simon Tan Ke Hong		24 Sept. 1855	27 Ap. 1855	
50*a*	Minjoot, John Luis Anna Cleto	Infant Son of D. De Cotta and C. Minjoot	26 June 1861?	19 Jan 1864	
51	Minjoot, Maria Frederick	Widow of the late Frederick Minjoot, of Malacca		7 Nov. 1858	57
52	Wood, John	Infant Son of Johannes Wood	3 Mar. 1848	24 June 1849	
53	Paulo Ng a-Thiam	Of Ka-yin chu (Kheh) Nephew of Yung Shu		1847-8	
57	Maria Lau Kiau	Wife of Ngi a-Chuan	1822-3	26 Nov. 1843	
59	Tan Khai Guan				
62	Di. Oliveero, Nicholsow	Born at Penang	6 Dec. 1788	18 Dec. 1854	66 yrs. 12 days
63	Sohier, Philip	(Inscription illegible)			
67	John Yong Thiam	Of 柴黃堡 Ka-yin-chu, [Kheh] father of Matthew Sz.-Chhun gnd. father of 'A-kali-a' Vong Sańg Cart a-Lan, Kin-niong and Yin-niong	1791-2	27 Feb. 1862 1-3 p.m.	72
68	James Bu-Kho a Sui		2^{d} 6^{m} 1784 (?16 July 1844)	8 July 1849	
69	Pedro Lim Tiong Hi	Of 隆都前嶺鄉	1814-5	19 Oct. 1847	34
69*a*	Só. Chhiú Kái	Of Shiú-Heng. [Near Canton]			

No.	Name	Description	Born	Died	Age
70	Ariea (?)	Mother of Josia Lo Teng-niu^{n}, Rosa Maria and Matthew		14 Mar. 1853 9-11 a.m.	
72	Melany, Peter	Second son of S. Melany		1 Nov. 1835	2 yrs. 8 mos.
73	Fransiz, Martha	Wife of A. T. Fransiz		16 Mar. 1835	32 yrs.
80	Martha	Mother of (S)teven (?) a-Kio, Tek-niu^{n} and Hong-niu^{n}		11^{m} 1841	
82	Joseph Tan a-Ku			1864-5	26
83	Pedro Heng Kwong Ko Paulo Heng Kwang Ju				
84	Olivaro, Andreke and Welsh, James			31 Mar. 1860 10 July 1863	43 52 yrs. 7 mos. 19 days
85	Scheerder, Louisa Cecilia	Wife of Johannes Scheerder		16 Nov. 1869	28 yrs. 8 mos. 16 days
87	Headstone	(Inscription illegible)			
87*a*	James Ngo		1805-6	29 May 1856	
89	Hansen, Ann Elizabeth	Wife of John Francis Hansen	18 July 1830	30 Jan. 1858	27 yrs. 6 mos. 12 days

No.	Name	Description	Born	Died	Age
90	Woodford, Samuel Arthur	Son of James Isaiah and Dorothea Woodford		13 Feb. 1845	4 yrs. 6 mos. 9 days
	Woodford, Dorothea	Wife of James Isaiah Woodford		3 Oct. 1850	37 yrs. 5 mos. 10 days
91	Blaver, Antoine Marc			12 July 1863	38
92	Jacob Ngin Pia^n				
93	Thomas Bun Beng Thai			31 Mar. 1861	
93*b*	James Heng Tiang Seng	Of 古厝洋鄉漁湖都 Kit-ye^n [Tiechiu]		17 Dec. 1849	
94	Vincentio Lim	Of 西嶺鄉饒平 Tiechiu Prefecture	15^d 5^m 1833	31 Aug. 1863	
95	Joseph Ngin Yong Seng		25^d 11^m 1823-4 1-3 a.m.	26 Mar. 1857	
96	Bello, Don Josė Gonzalex			30 April 1860	28
99	Paulo Hen Fo Siu	Of 龍崗堡 Ka-yin-chu (Kheh)		1865-6	
101	Francisco Ko (辜) Thai Seng	Father of Stephen and 'Lo-jia-Bong'			
102	Statoo, Antonia Catherina Applo	Widow of Zacharias Statoo, born in Penang		23 Sept. 1852	25
103	Joseph Ng Tsz	Friend of Hu Soe &c.	1811-12	12 Jan^y 1847	37
104	Pedro Tiu^n Thien Siong			4 Jan. 1847	

No.	Name	Description	Born	Died	Age
105	Paulo Yong Liuk	Of Chin Phin, Ka-yin chu (Kheh)	1819-20	26 May 1846	
106	Benedict Vong a Ngi	Of Ka-yin-chu (Kheh)	1794-5	1846-7	
111	Wooden, Brezeda	Wife of S. Wooden		30 June 1846	
116	Paulo Yeo^{n}		1832-3	21 Feb. 1857	26
117	Rough, Captain John	Late Marine Surveyor for this Port. Born at Dundee	23 May 1805	6 Jan. 1844	38
120	Hinnekindt, Eugène	A mes enfants			
121	Joaquim Lan Chhun	Parents of Matthew, John, Franciso, Louis and Anna	1811-2	30 June 1860 1-3 p.m.	
	Joanna		1824-5	25 Aug. 1860 5-7 p.m.	
122	Brown, John	Second son of Wm. Brown of Egypt Park Paisley		24 May 1845	27 yrs.
123	Cecilia Ng	Mother of Francisco		26 April 1862	
124	Paulo Ki Oai			25 July 1860	44
124A	Sit Yu Ngo				
	Lau Lo Leng	His wife			
125	Hinnekindt, Numa	A notre chère enfant		7 Ap. 1865	11 mos. 14 hrs.
127	Pereira, M. L.			2 Jan. 1861	35 yrs 11 mos. 9 dys

No.	Name	Description	Born	Died	Age
129	Chung Fat Long	Of 營堡仁慈里 Ka-yin-chu (Kheh)		Autumn 1858	
130	Nell, Henry			10 June 1844	47
132	Pedro Chung Khe Tan	Friend of Vincentio Lau Tsu Hah		12 Feb. 1846	
133	Pedro Yeo" Ju	Of 鬢鷗鄉 Teng-Hai (Tie-chiu) father of Thaddeus Yeo" Ju		18 April 1846	
134	Pedro Li Kam	Of 里洋鄉 Hai-ye", (Tie-chiu)		12 June 1848	
135	Paulo Kong Hi	Of Ka-yin-chu (tomb erected in 4th m. 1846)			
136	Jacob Lò Pò	Of San-Neng (Canton)		21 May 1846	
137	Pedro Ki Ien	Of 官袋鄉 Tiechiu		4 Jan. 1847	
138	Tereira, Paul			15 Aug. 1834	4½
139	DeAlmeida, Ella	Infant daughter of Mrs. Maria Izabel and Josè DeAlmeida Esq.	15 June 1833	12 May 1834	10 mos. 27 dys
140	DeAlmeida, Charles	Infant son of Mrs. Maria Izabel and José DeAlmeida	29 Jan. 1835	6 Feb.. 1836	1 yr. 8 dys.
142	Louis Thong Son Pak	Of Thai-pu, god-father of Chong Lien, Lai Yin and Chung Fú (tomb repaired in Winter 1863)			
145	Athama Phua"	A woman	3^{d}. 6^{m}. 1829	22 June 1849	
146	Joseph So Cheng Tong	Of Tiechiu			

No.	Name	Description	Born	Died	Age
147	John Tiu^{n} Ngi Kiat	Of 下鯤鄉 Hai-ye^{n}, Tiechiu elder brother of Ngi Tiang and Ngi Kok	10^{d}. 6^{m}. 1818	25 July 1860	
149	D'Almeida, Maria Eugènia	Infant daughter of Rose Maria and Joaquim D'Almeida Esq.		23 Jan. 1840	1 year 7 days
152	Anton Tan Tio			5 May 1852	
153	Lopez, Dona Maria Engracia			18 Jan. 1846	23 yrs. 2 mos.
154	Ball, John	Boatswain in U.S.A. Navy, died on board the U.S. Ship "John Adams". Also two Shipmates James Gibson and John Rice.			35 yrs.
157	Alliandre, Sibrino			26 Jan. 1853	33
158	Taylor, Charles Henry	(Rest illegible)			
160	Maria Heng	Wife of Lim Chi Kho		13 Sep. 1859	
161	Matthias Tan Kim			9 Jan. 1847	
164	Wilson, John	Late Master of the barque "Jane Wilson" of Greenock		28 Nov. 1844	35
165	Chu a-Phua^{n}				
166	Anthony Yeo^{n} Kong Lan	Father of a-Soan (tomb erected in 3rd m. 1858)			47
167	Ross, John	Marine Surveyor for this Port. Master Mariner in the Singapore and Batavia trade		20 Sep. 1844	37
168	Darcey, T. B.			20 Aug. 1861	

No.	Name	Description	Born	Died	Age
170	Joseph Kho Tek I		1781 (? 1841)	9 May 1857	
171	Paulo Na" Khi Mui	Three years old	1862	12 Feb. [1864]	
172	Thomas Tan Kó	(?) of 霞露	1^{d} 5^{m} 1811	20 June 1849	
173	Domingo Yöng Hon	Of Yöng-kong, Shiu-heng (Canton)		2 June 1849	
174	de Thune, Le Comte		October 1803	Oct. 1863	
175	James Chan Tek Sun		1825-6	28 May 1863	
176	Joseph Heng Che	Father of Heng Chho Lai	1812-3	12 May 1863	
177	Paulo Tiu" Seng Thai	(? Date of birth)		1837	
178	Stephen Vun Fo Siu	Of Hin-nen, Ka-yin-chu [Kheh] Tomb repaired in 2nd m. 1862			
179	Nicolo Vong Sz Pong	Of 伯公 Lane, 華 (?) 柯泥 (?) 鄉 Ka-yin-chu [Kheh] Father of Khet-on and a-Moi			
180	Pedro Tan Thian Sun	Of 花宮鄉 Hai-Ye" Tiechiu		11 April 1849	
181	Andrew Ng To Kuan		1^{d} 9^{m} 1821	15 Sept. 1849	
184	Anthony	Infant son of Heng Bu Hah	20 April 1863	15 Mar. 1864	
185	Susannah	Daughter of Tan Lam	Feb. 1856	15 April 1857	
187	Philip Bu-kho a-Sai, Anna Te Hua	Parents of 5 daughters	1808-9	20 Jan. 1864	

No.	Name	Description	Born	Died	Age
188	Austin Lai Yen Chin	Of Ka-yin-chu [Kheh] elder brother of Francisco Fa and father of Chhong Shiú		1848	
189	Francisco Heng Toa Huat	Infant Son	21 Feb. 1861	18 Mar. 1865	
190	Francisco Lai Fa	Of Ka-yin-chu (Kheh) God-father of Andrew Yung and father of Francisco a-Piang		5 Oct. 1849	
193	James Liu Fung Kon	Of 招福鄉 Chin Phin (Kheh)		1865 A. D.	
194	Sylvester Khó Niu^{n}	Of 宏安鄉 Hai-ye^{n}, Tiechiu		31 Dec. 1847	
196	James Sih Tsong Leng		9 May 1835	25 Aug. 1857	
197	Dies? Ana	(Headstone inscription illegible)			
200	P. G. (headstone)				10
203	Pedro Chhua Tone Hân		12m. 1811-12	11m. 1864	
207	Jeremiah, Maria	Wife of John Jeremiah together with her, three sons Baldwin, George and John		22 May 1862	35 yrs. 7 mos. 20 days
208	Thomas Lau Bun Han Justina Lau Gek-Niu^{n}	Children of Joaquim Lau Chhum			
209	Pedro Lim Teng Lau	Of 綿湖鄉 Kit-ye^{n} Tiechiu		16 Aug. 1844	
210	John Ngo Siong Heng	Of 彩唐鄉 Hai-yê^{u} Tiechiu		10 Sept. 1844	
211	Paulo Chhua Yu Kiong		1799-1800	1844-5	45

No.	Name	Description	Born	Died	Age
217	Pedro Yong a-Chhit	Of Ka-yin-chu (Kheh)			
218	Francis, Jonan	Born at Bagdad		18 June 1855	60
221	Agatha Yeô" Chhun Ki	Wife of Tan a-Ki			
222	Nicolo Yeô" Chuan				
224	Thomas Tan Chin Hi	Of 柯隴鄉菴埠 Hai-yê" Tiechiu		16 Dec. 1853	
225	Mares, Anbabut	Neè Vangrundelbeke		9 Dec. 1863	
226	Philip Ong Lim			29 May 1855	
227	Tan a-Bi	Of 北寨監鄉 Hai-yê" Tiechiu		23 Mar. 1855	
228	Penefather, Caroline	Wife of A. P. Penefather		1 Jan. 1860	25
229	Scott, Marie Dominica			6 Dec. 1858	2 yrs. 10 mos. 16 days
230	Francis, Alfred	(Wooden cross)		13 June 1850	2
231	Anna Ngo Ki-niû"				
232	D' St. Maria, Peternela	Wife of Peter D' St. Maria		3 Oct. 1847	28 yrs. 2 mos.
233	Thomas Koeh a-Chun	Of Ka-Yin-Chu (Kheh) (? date of births)		30 May 1845	
235	Joseph Chò -a Maria Theng				
236	Aroozoo, John		12 May 1860	30 Sept. 1860	

Section C.

No.	Name	Description	Born	Died	Age
1	Tomb erected	By Captain The Hon. Arthur A. Coachrane C.B. and some of the Officers and ship's company of H. M. S. Niger			
	Died from disease				
	Freshwater, A.	Capt. Cox died at Canton		1 Dec. 1856	27
	McPherson P. J.	A. B. ,, S'pore		22 Dec. 1856	27
	Pearce, James	Stoker ,, Canton river		17 July 1857	31
	Waller, Robert	Mate ,, Hongkong		25 Jan. 1858	29
	Hill, William	Capt. Miz. top. died at Hongkong		26 Jan. 1858	33
	Finn, Jeremiah	A. B. died at Canton		25 Feb. 1858	33
	Ashman Chas.	Boy ,, S'pore		12 April 1858	17
	Bourne, Mark	Ordy. ,, ,,		11 April 1858	20
	Handcock, Robt.	Gunner R.M.A. ,, ,,		15 April 1858	23
	Middleton, V.	Private R.M. ,, ,,		16 April 1858	30
	Gibbs, James	A. B. ,, ,,		16 April 1858	20
	Durrant, Alfred	Ord. ,, ,,		22 April 1858	19

No.	Name	Description	Born	Died	Age
	Stevens, W.	Boy died at S'pore		9 July 1858	17
	Manners, George	A. B. ,, ,,		29 July 1858	21
	Died in action				
	Seig, Christian	R. M. A. at Fatshan		1 June 1857	29
	Griffin, Edward	A. B. ,, ,,		,,	27
	Bullemore	Stoker ,, Canton		5 Jan. 1858	27
	Smith, H. A.	Boy ,, ,,		,,	17
	Drowned.				
	Roughton, Mr. G. E.	Master Asst. ,, at sea		23 Oct. 1856	18
	Day, Charles	Boy ,,		8 Sept. 1856	16
	Meckril, H. J. Woods, William	Ordy. Pahang Capt. F. C. at sea		19 May 1858	18
2	Gibson, Lieut. James J.	14th Regt. M. N. I.		1 June 1857	27
4	Duncan ? Walter S.			14 May 1857	60
5	"Our Willie" (headstone)			Dec. 1856	
6	Stirling, William			19 May 1856	
7	Lee, Wm. Junr.	Born in New York U. S. A.	14 Sept. 1823	1 Mar. 1836	
8	Neish, Thos. B.			30 Nov 1868	39
11	Coventry, Chas. Farmer	1st Lieutenant H.M.S. "Rapid"		12 Mar. 1855	30
13	Lane, Mary Florinda			3 Feb. 1835	
14	Wilkinson, Alice	Wife of Captain W. Wilkinson		1 Jan. 1855	26 yrs. 2 mos.
15	Salbert, Carl Wilhelm Andrea	Born in Manila	30 Nov.? 1851	Jan.? 1855	

No.	Name	Description	Born	Died	Age
16	Becker, Johanna Carola Catharina	Born in Hongkong	30 May 1864	30 Nov. 1864	
17	Van, Soest Leendert	Merchant of Singapore		30 Dec. 1859	27½
18	Leicester, Samuel			19 Sept. 1863	14 yrs. 2 mos.
20	Allen, Laura Maria Agnes also Florence Louisa	Second daughter of Henry and Charlotte Allen		2 Jan. 1849	4 yrs. 3 mos.
				2 Apl. 1849	4 mos.
21	Peter, Saml: (R. N.)	Died on board, H. M. S. "Albatross"		18 Jan. 1849	21
22	Thorndick, Wm. Robt.	Of Uxbridge, Apprentice on board the Ship "Rafael"		8 Mar. 1849	17
23	Fox, Ann Eliza	Infant daughter of S. P. and Ann Fox		1 Jan. 1858	4 mos.
24	Wiseham, Emily Elizabeth	Child of Richard and Emily Wiseham	19 Dec. 1856	20 Feb. 1856	2 mos.
25	McArthur, Mary Jane	Daughter of John and Eliza McArthur		13 Nov. 1856	5 mos. 27 days
26	Walter, Henry Edward	Son of Samuel and Eliza Walter, (rest illegible)			
27	D'Almeida, Emily Delphina			9 Aug. 1855	5 yrs. 9 mos. 8 days
	D'Almeida, Annette Elizabeth			10 Sept. 1855	4 yrs. 6 mos. 12 days

No.	Name	Description	Born	Died	Age
28	Johnson, Charles	Born at Deptford in the Co. of Kent. Died at his residence the "Half way House."	10 Jan. 1811	14 June 1861	50
29	Brown	Wife of William Brown		18 Mar. 1853	44
30	Stewart, Capt. John	Born at Greenock Renfrew Commander of the Barque "Annie."		17 May 1862	36
31	Wicksteed, John	Born in London	24 June 1803	27 Dec. 1847	44 yrs. 6 mos. 3 days
32	Rudd, Herman	Lieutenant on board H. N. M. Steamer "Batavia."		10 Mar. 1848	
33	Rigg, Mary Jane	Child of Christopher Robert and Mary Rigg		20 Mar. 1849?	17 mos.
35	Yeo" Née Tan	Mother of Tan Kek Sun and Tan Heng Un		5 m. 1863	
37	Walter, Francis Ernest	Merchant, Born at Bremen	17 May 1817	22 Sept. 1847	
39	Richard, Thomas	Chief Steward of the Steamship "Singapore."		25 Dec. 1862	27
41	McDogall, Robert	Seaman, H. C. Steam frigate "Semiramis"		8 June 1849	26
42	(Headstone lying down) Gray, Elizabeth	Wife of George Gray, M. M. born in Sunderland and died on board the "Allendale" in Singapore Harbour		12 Nov. 1861	47
43	Coveney, J.	Quarter Master Sergeant 40th Regt. M. N.		22 Oct. 1862	43

No.	Name	Description	Born	Died	Age
44	Dyce, Alexander		1810	1848	
45	May, Samuel T.	Chronometer maker		14 Dec. 1862	
46	Leisk, Capt. Thos.	Of Lerwick. Commander of the ship "Fort William"		3 Sept. 1849	39
47	Frankly, George Wm.			1852	4 mos. 15 days
48	Wilkinson, Sarah	Wife of Capt. Wilkinson & daughter of Capt. W. C. Leisk Marine Surveyor of Singapore		6 April 1853	21
49	Milton-The Rev. Samuel			6 Sept. 1848	60
51	Craigie, David	Headmaster St. Andrews Parochial Schools at Madras		15 May 1849	31
52	Cudliep ? Nancy			1 Oct. 1848	50
53	Henwood, George Edward			18 Jan. 1849	34
54	Smith, Harriet Allisson	Wife of R. M. Smith, died at sea also their Infant daughter Eliza Matilda who died at sea 25 June 1850 aged 3 mos.		20 June 1850	23
55	Young, G.	M. M. (rest illegible)			
56	Arnold, Capt. Thomas	Of the ship "Edward Boustead" of Liverpool died on board		20 Aug. 1849	53
57	Gilzian ? Mary	(headstone-illegible)			
58	Burt, Martin	M. M.		23 Mar. 1851	47 yrs. 9 mos.
59	Wise, Joseph	Born at Whin Close Cumberland	19 May 1815	24 June 1852	

No.	Name	Description	Born	Died	Age
60	Harvey, John	Mr. Sergt : 51st Regt. M. N. I. also his Infant daughter Madeline aged 5 months 14 June 1850		22 Feb. 1850	28
61	Stephenson, Capt.	Of Ship "Santiago"		31 Oct. 1850	41
62	Gentle, James D.	1st Engineer Steamer "Hellespont"		9 Oct. 1861	24
64	Léi a-chan	Of San-neng (Canton)		25 Feb. 1864	
65	A. B. I.	Chinese Christian		5 Sep. 1850	26
66	Wright, Cissie Augustus	Daughter of George Tod and Mary Wright		25 June 1851	1 mo. 16 days
67	Anderson, James	Master of the Ship "Rajastha" of Glasgow		6 Dec. 1852	20 30
68	Tomlinson, R. M.	Of H. M. Surveying Schooner "Saracen"		19 Mar. 1857	20?
69	Li Jiu Keng	Of Lam-cheng (Hokkien)	26 Aug. 1864	17 March 1865	
71	Keasberry, Ellen	Daughter of B. P. Keasberry		19 July 1852	20? mos.
72	Griffin, Alex. W.			12 Dec. 1155	14 mos.
73	Hewetson, Francis	(illegible)			45
74	Johannes, Gerrit	Born at Batavia	9 Jan. 1825	10 Jan. 1851	
75	Seale, Francis William	Mate. H. C. Pilate Service		17 Jan. 1851	
76	Minard, Wm. Henry	M. M.		30 Dec. 1850	52 yrs.
77	Andree, Capt. G. F.	Of the barque "Clarissa"		18 May 1851	54 yrs. 10 mos. 22 days

No.	Name	Description	Born	Died	Age
78	McLachlan, Patrick			Jan. 1853	
80	Colin, Campbell, John	Second son of the late Sir Grey Campbell Bart : and of Pamela his wife died on board H.M.B. " Bittern "		23 April 1853	28
81	Kick, Emma	Wife of Wm. Kick		9 Jan. 1854	21
86	Welsh, Capt. Dan	(Remainder illegible)			
88	Headstone lying down				
	Young, Capt.	This stone is placed at the head of Mrs. Young's grave to the memory of her lawful husband Capt. J. Young and her sister Isabella			
89	Tones, John Yone	Of H.M.S. " Sybill "		25 Oct. 1854	24
90	Stevens, Edmund	Caulker, on H.M. Sloop "Kapio" Petty Officer for 20 years		21 Feb. 1865	44

Section D.

No.	NAME	DESCRIPTION	BORN	DIED	AGE
7	Maria Ng Liang Niu^{n}	Mother of Tan Ban Hah and Maria	1824-5	1857-8	
15	Gomes, J.	Husband of F. Gomes	23 Dec. 1818	25 Nov. 1853	
19	Cashin, Charlotte	Wife of C. Cashin		11 Aug. 1859	32 yrs. 9 mos. 5 days
21	Anakin, Charles	For 12 years on board the Barque "Mary" of Liverpool		24 Mar. 1855	52
22	Falconer, John	Engineer, born at Stanenover? Scotland		31 Nov. 1864	
23	Bonnyface, Charles	Native of Telpham? Sussex, England. Midshipman on board the Barque "Warren Hastings" of England		19 Sept. 1864	21
24	Liau Chhun Min	Of Kui-shen (Hiechiu Kheh)		Sept. 1814	
25	Graves, Ed.			Sept. 1859	40
26	Hide, John	Gunner on H. M. S. "Renard"		4 Ap. 1860	
30	Silvester, Horace	Native of Hyannes U. S. A.		29 April 1860	
31	Chalk, Chas. Henry	Of the P. & O. Companies Service Calcutta, who came here in search of health		5 Nov. 1856	26 yrs. 11 mos. 27 days
32	Parks, Peter	(Inscription illegible)			
33	Li Kim Lim	Of Ka-yin-chu tomb repaired in Spring of 1880 by his 2nd son Siau Yi (?) and others			

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NAME.	No. on Plan.	Section.
A. B. 1.	65	C
Allen, Laura Maria Agnes	20	C
Alliandre, Sibrino	57	B
Anakin, Charles	21	D
Andersen, William	198	A
Anderson, James	67	C
Andree, Capt. G. F.	77	C
Anthony	184	B
Apcar, Andrew Satoor	101	A
Arica	70	B
Armstrong, Adam	144	A
Armstrong, John	238	A
Arnold, Capt. Thomas	56	C
Aroozoo, John	236	B
Ashman, Charles	1	C
Ball, John	154	B
Becker, Johanna, Carola, Catharina	16	C
Behn, August Wilhelm	11	A
Bell, Kate	230	A
Bello, Don José Gonzalex	96	B
Bernard, Mrs. Esther	160	A
Bing, Johanna Catherine	86	A
Black, John	7	A
Blaver, Antoine M.	91	B
Bonnyface, Charles	23	D
Bourne, Mark	1	C
Brabazon, Harry Lambert	132	A
Bray, Jane	202	A
Breen, John Edward	184	A
Brown	29	C
Brown, John	122	B
Bu-kho a-Sai, Philip	187	B
Bu-kho a-Sui, James	68	B
Bullemore	1	C
Bun Beng Thai, Thomas	93	B
Burn, Emily Caroline	12	A
Burn, The Rev. Robert	13	A
Burnett, Catherine	242	A
Burnett, Joseph	242	A
Burnett, William	242	A
Burt, Martin	58	C
Carroll, The Rev. C. R.	247	A

NAME.	No. on Plan.	Section.
Carpenter, Mary Elizabeth	239	A
Cashin, Charlotte	19	D
Caswall, Elizabeth	233	A
Chalk, Charles Henry	31	D
Chan Tek Sun, James	175	B
Cheng, Pedro	35	B
Chhua Tong Hàu, Pedro	203	B
Chhua Yu Kiong, Paulo	211	B
Chng a-Joe, John	38	B
Chng Beng Bun, Stephen	41	B
Chò a-Theng, Joseph	235	B
Chong Son Pak, Louis	142	B
Chu a-Phua"	165	B
Chùa Ngi An, Pedro	24	B
Chung Fat Long	129	B
Chung Khe Tan, Pedro	132	B
Chung Sin, Martin	12	B
Church, William Marryat	14	A
Clark, James Scott	150	A
Clark, James Scott	152	A
Clement, William	258	A
Coleman, George D.	14	B
Colin, Campbell	80	C
Collingwood, John C.	30	A
Conolly, John	16	B
Copeland, James T.	256	A
Corbett, Joseph	268	A
Cornish, Frederick George	56	A
Coveney, J.	43	C
Coventry, Charles Farmer	11	C
Cox, Thomas Bernard	17	B
Craigie, David	51	C
Crosby, Thomas Kidder	23	B
Crowell, Seth	189	A
Cudliep, Nancy	52	C
Cumming, John P.	259	A
Cunegonde	46	B
Cunningham, John Thomas	20	B
Cunningham, Mary Ann	11	B
Cunningham, Mathew Peter	22	B
Curtis, Charles J.	255	A
Cuthbertson, Robert John	4	A
D'Almeida, Anette Elizabeth	27	C
D'Almeida, Emily D.	27	C
D'Almeida, Sir Jozé	6	B
D'Almeida, Maria Eugenia	149	B

NAME.	No. on Plan.	Section.
D'Almeida, Terelia	9	B
Darcey, T. B.	168	B
Davidson, R. R. W.	3	A
Davis, Robert Thomas Farquhar	53	A
Dawson, Capt. Wm.	261	A
Day, Charles	1	C
DeAlmeida, Angelina	7	B
DeAlmeida, Charles	140	B
DeAlmeida, Ella	139	B
Dean, Mrs. Matilda C.	148	A
Deare, Diana	54	A
Decamp, Eugene	208	A
Demeeo, Maria	8	B
DeOlivero, Nicholson	62	B
DeSilva, Januario, Agostinio	69	A
DeSilva, Mrs. Joaquina	166	A
D' St. Maria, Peternela	232	B
DeThune, Le Comte	174	B
Dies, Anna	197	B
Diron, Mary	143	A
Duncan, Walter S.	4	C
Dunn, Arthur Charles	246	A
Durrant, Alfred	1	C
Dyce, Alexander	44	C
D'Zilva, Martina	102	A
Edwards, John	109	A
Ellis, John K.	248	A
Falconer, John	22	D
Farquhar, Wm. Clark	138	A
Ferrier, James	145	A
Finn, Jeremiah	1	C
Fox, Ann Eliza	23	C
Francis, Alfred	230	B
Francis, John Henry	212	A
Francis, Jonan	218	B
Frankly, George	47	C
Fransiz, Martha	73	B
Freshwater A.	1	C
Fu Vun Hi	253	A
Gable, Mary	206	A
Geale, Janet	235	A
Gentle, James D.	62	C
Germon, Lieut. J. P.	155	A
Gibbs, James	1	C
Gibson, Lieut. J. J.	2	C
Gibson, James	15A	B

NAME.	No. on Plan.	Section.
Gilzian, Mary	57	C
Gomes, J.	15	D
Graham, Jane	49	A
Graves, Edward	25	D
Gray, Elizabeth	42	C
Gray, Wm.	117	A
Green, George	14	A
Grey, Leopold James Hy.	191	A
Griffin, Alex. W.	72	C
Griffin, Edward	1	C
Hackman, Herman Jacques Lucretia	162	A
Hallpike, Stephen	55	A
Handcock, Robert	1	C
Hansen, Ann Elizabeth	89	B
Hartley, Henry	214	A
Harvey, John	60	C
Haskell, J. L.	232	A
Hen Fo Sin, Paulo	99	B
Henderson, Captain	118	A
Hendriks, James	31	B
Hendriks, John	32	B
Heng Che, Joseph	176	B
Heng Kwang Ju, Paulo	83	B
Heng Kwang Ko, Pedro	83	B
Heng, Maria	160	B
Heng Tiang Seng, James	93B	B
Heng Toa Huat, Francisco	189	B
Henwood, George Edward	53	C
Hewetson, Charlotte	35	A
Hewetson, Francis	73	C
Hewetson, Mrs. Marian	22	A
Hewetson, T.	19	A
Hewetson, W.	20	A
Hide, John	26	D
Hill, William	1	C
Hind, Wm. Henry	165	A
Hinnckindt, Eugene	120	B
Hinnckindt, Numa	125	B
Hogg, Lucy	28	A
Howard, Peter	85	A
Hudson, Thomas	94	A
Ivatts, Emily	156	A
Jarret, Thomas	147	A
Jauncey, Robert	164	A
Jeremiah, Maria	207	B
Joanna	121	B

NAME.	No. on Plan.	Section.
Johannes, Gerrit	74	C
Johnson, Charles	28	C
Keasberry, Ellen	71	C
Khó Niu", Sylvestor	194	B
Kho Tek I, Joseph	170	B
Ki Ien, Pedro	137	B
Ki Oai, Paulo	124	B
Kick, Emma	81	C
Kirby, John L.	277	A
Knus, Maria Catherine Sophia	273	A
Ko (辜) Thai Seng, Francisco	101	B
Koch a-Chun, Thomas	233	B
Kong Hi, Paulo	135	B
Kraal, Amelia	223	A
Kraal, Wilhelmina	222	A
Kraal, William	222	A
Lahy, Thomas	77	A
Lai Fa, Francisco	190	B
Lai Yen Chin, Austin	188	B
Lane, Mary Florinda	13	C
Lau Bun Han, Thomas	208	B
Lau Chhun, Joaquim	121	B
Lau Chhun, Paulo	40	B
Lau Gek-niu", Justina	208	B
Lau Hong Liat, Joseph	37	B
Lau, Joseph	47	B
Lau Kiau, Maria	57	B
Lau Lo Leng	124A	B
Lau Teu, Vincentio	42	B
Lee, Wm. Junr.	7	C
Léi a-Chan	64	C
Leicester, Mary	23	A
Leicester, Rosamond	218	A
Leisk, Anna	167	A
Leisk, Capt. Thomas	46	A
Leslie, Captain	163	C
Leslie, George	140	A
Li Ji, Paulo	30	B
Li Jiu Keng	69	C
Li Kam, Pedro	134	B
Li Kim Lim	33	D
Liau Chhun Min	24	D
Lim, Paulo	4	B
Lim Teng Lau, Pedro	209	B
Lim Tiong Hi, Pedro	69	B

NAME.	No. on Plan.	Section.
Lim, Vincentio	94	B
Lindsay, The Hon. C. R.	134	A
Liu Fung Kon, James	193	B
Lò Pò, Jacob	136	B
Lock, James	161	A
Lopez, Don. Maria Engracia	153	B
Lovi, Henry	241	A
Lyon, James	183	A
McArthur, Mary Jane	25	C
McDougall, Robert	41	C
McIntyre, Hugh	227	A
McLachlan, Patrick	78	C
McMahon, M. J. T.	41	A
McPherson, P. J.	1	C
McSwiney, Anne	34	A
McTavish, Capt. Archibald	199	A
Mackertoom, Mackertoom Galoost	84	A
Macnair, George	267	A
Macnair, Robert F.	267	A
Mactaggart, Elizabeth Helen	254	A
Mactaggart, Mary Ann	238	A
Maitland, William	63	A
Manners, George	1	C
Mares, Anbabut	225	B
Margaret, Caroline Regina	136	A
Maria	235	B
Martha	80	B
Mathers, Henry	197	A
May, Samuel T.	45	C
Meckril, H. J.	1	C
Melany, Peter	72	B
Melitus, Philip Paul	78	A
Mellington, Elizabeth	275	A
Middleton, V.	1	C
Milton, The Rev. Samuel	49	C
Minaid, Wm. Henry	76	C
Minjoot, John, Luis Anna Cleto	50a	B
Minjoot, Maria, Frederick	51	B
Mitchell, The Rev. J. A.	192	A
Moncrieff, Thomas	216	A
Montgomerie, Alexander Graham	15	A
Montgomerie, Margaret	15	A
Montgomerie, Robert Alexander	15	A
Moyle, Edith Elizabeth	244	A
Moyle, Mary Harriot	243	A
Muirhead, Emma Jane	269	A

Name.	No. on Plan.	Section.
Mundy, Thomas	93	A
Na" Khi Mui, Paulo	171	B
Napier, James Brooke	1	A
Neish, Thomas	138	C
Nell, Henry	130	B
Neubronner, Eliza	234	A
Neville, Patrick Joseph	21	B
Ng a-Thiam, Paulo	53	B
Ng, Cecilia	123	B
Ng Liang Niu", Maria	7	D
Ng To Kuan, Andrew	181	B
Ng Tsz, Joseph	103	B
Ngin Pia", Jacob	92	B
Ngin Yong Seng, Joseph	95	B
Ngo, James	87	B
Ngo Ki niu", Anna	231	B
Ngo Siong Hing, John	210	B
Nicholson, George W. W.	127	A
Nicholson, William David	128	A
Nicholson, George	129	A
Olivaro, Andreke	84	B
Ong Lim, Philip	226	B
Ottoson, Emily Louisa	250	A
" Our Willie "	5	C
Oxley, Elleanor Amelia	12	A
P. G.	200	B
Parks, Peter	32	D
Paterson, Alice Graham	220	A
Pearce, James	1	C
Penefather, Caroline	228	B
Pereira, M. L.	127	B
Perreau, Charles	110	A
Pestana, Catherine	18	B
Peter, Samuel	21	C
Peterson, Edward Alfred	217	A
Phua", Athatina	145	B
Pickering, Mary Eliza	16	A
Pillay, Aaron	204	A
Plowden, Elizabeth Ann	190	A
Presgrave, Edward	13	A
Prior, Hesther Sophia	143	A
Reid, Jane Elizabeth	178	A
Reynell, Walter	149	A
Rice, John	154	B
Richards, Thomas	39	C
Rigg, Mary Jane	33	C

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Robb, Ann	215	A
Robb, J. Riach	215	A
Robertson, Archibald J. Spottiswoode	177	A
Robinson, Alice	252	A
Robinson, Stella	252	A
Rodrigues, Julia	276	B
Rodyk, Christian J.	158	A
Rogers, Capt.	151	A
Rose, Emily Carcy	213	A
Ross, John	167	B
Rough, Captain John	117	B
Roughton, G. E.	1	C
Rozario, de Petronell	29	B
Rowlandson, Emily Jane	131	A
Rudd, Herman	32	C
S. and E. S.	225	A
Salbert, Carl Wilhelm Andrea	15	C
Salmon, John Kinsey	240	A
Sarkies, Aristakes	92	A
Sarkies, T. A.	105	A
Saunders, Eliza Wallace	25	A
Scheerder, Louisa Cecilia	85	B
Scheerder, Capt. Paul	181	A
Schumann, Edward	174	A
Scott, Harry	9	A
Scott, Joseph Richard	62	A
Scott, Marie Dominica	229	B
Scott, William	26	A
Seale, Francis Wm.	75	C
Secretan, Francis James	172	A
Seig, Christian	1	C
Seth, Gregory	96	A
Seth, Hosannah Peter	95	A
Shepherd, John Forbes	182	A
Shepperd, Wm.	65	A
Siffken, Charles Henry	260	A
Sih Tsong Leng, James	196	B
Silvester, Horace	30	D
Simon, Juliet A.	157	A
Sinclair, Henry	113	A
Sit Yu Ngo	124A	B
Skinner, A. W.	276	A
Skinner, Ann Jones	257	A
Smart, Edward	57	A
Smith, Charles Edward	68	A
Smith, H. A.	1	C

NAME.	No. on Plan.	Section.
Smith, Harriet Allison	54	C
Sò a-Piu, Paulo	43	B
So Cheng Tong, Joseph	146	B
So Chhi^n Kài	69A	B
Sohier, Philip	63	B
Sohst, John Friedrich	209	A
Song Pat Ko	253	A
"Spartan" H.M.S., Capt., Officers & Men of	264	A
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Statoo, Antònia Catherina Apploo	102	B
Steer, W. H.	159	A
Stephens, Simon	100	A
Stephenson, Capt.	61	C
Stevens, Edmund	90	C
Stevens, W.	1	C
Stewart, Capt. John	30	C
Stirling, Wm.	6	C
Stryker, The Rev. Isaac P.	153	A
Sutcliffe, Ada	200	A
Swannah	185	B
Sweeting, Samuel	2	A
Tan a-Bi	227	B
Tan a-Bin, James	48	B
Tau a-Ku, Joseph	82	B
Tan Chin Hi, Thomas	224	B
Tan Ke Hong, Simon	50	B
Tan Khai Quan	59	B
Tan Kim, Matthias	161	B
Tan Kö, Thomas	172	B
Tan Kò Hien	25	B
Tan Moh	4	B
Tan Nam, Francisco	28	B
Tan, Stephen	49	B
Tan Thian Sun, Pedro	180	B
Tan Tio, Anton	152	B
Taylor, Chas. Henry	158	B
Taylor, Francis	237	A
Te Hua, Anna	187	B
Temperton, William	47	A
Ter-Stephen, Mercatoon Michael	67	A
Tereira, Paul	138	B
Thorndick, Wm. Robert	22	C
Tingate. Thomas W.	262	A
Tiu Ngi, Joseph	44	B
Tiu^n Ngi Kiat, John	147	B
Tiu^n Seng Thai, Paulo	177	B

NAME.	No. on Plan.	Section.
Tiu^{n} Thien Siong, Pedro	104	B
Tiu^{n} Toa, Thaddens	45	B
Tiu^{n} Ui Lok	39	B
Tolson, Robert P.	224	A
Tomlinson, R. M.	68	C
Tones, John Youl	83	C
Van, Soest L.	17	C
Vong a Ngi, Benedict	106	B
Vong Sz Pong, Nicolo	179	B
Vun Fo Sin, Stephen	178	B
Waller, Robert	1	C
Walter, Francis Ernest	37	C
Walter, Henry Edward	26	C
Watson, Edward	94	A
Webster, Josiah	188	A
Weed, Joseph H.	186	A
Welsh, Capt. Dan	86	C
Welsh, James	84	B
White, The Rev. Edward	29	A
Whitehead, Horrocks	66	A
Wickstead, John	31	C
Wilkinson, Alice	14	C
Wilkinson, Sarah	48	C
Williams, John	94	A
Wilson, James	176	A
Wilson, John	164	B
Wischam, Emily Elizabeth	24	C
Wise, Joseph	59	C
Wood, John	52	B
Wood, Martha Maria	194	A
Woods, John Henry	195	A
Woods, William	1	C
Wooden, Brezeda	111	B
Woodford, Dorothea	90	B
Woodford, Samuel Arthur	90	B
Wright, Cissie Angustine	66	C
Yeo^{n}, Paulo	116	B
Yeo^{n} Chhiong Ngi. Ignacio	35	B
Yeo^{n} Chhun Ki, Agatha	221	B
Yeo^{n} Chuan, Nicolo	222	B
Yeo^{n} Ju, Pedro	133	B
Yeo^{n} Khong Lan, Anthony	166	B
Yeo^{n} nee Tan	35	C
Yong a-Chhit, Pedro	217	B
Yong Hon, Domingo	173	B
Yong Kim Long, Joseph	34	B

NAME.	No. on Plan.	Section.
Yong Link, Paulo	105	B
Yong Ngi Ko, Anton	33	B
Yong Thiam, John	67	B
Young, Capt.	88	C
Young, J.	55	C

EXPLANATION OF THE PLATES.

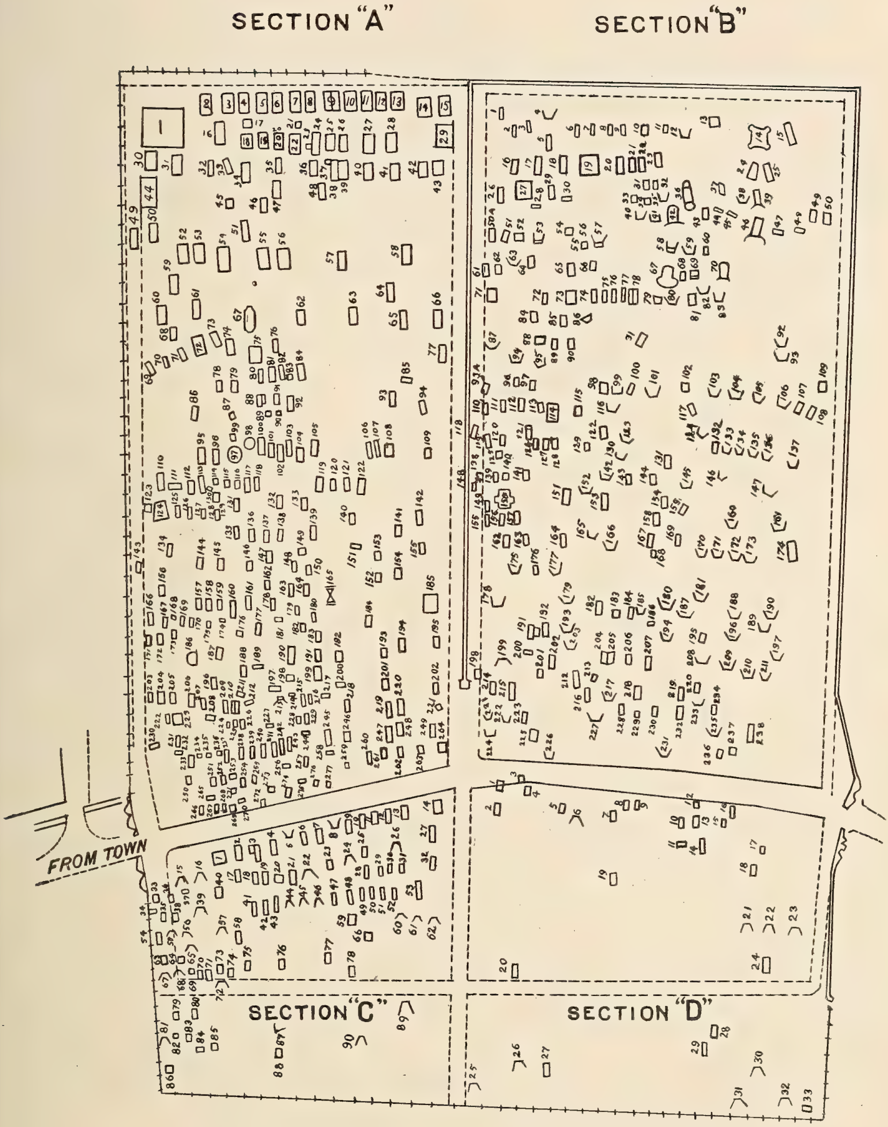
Pl. I. Plan of the Cemetery on Fort Canning Hill, Singapore.

Pl. II. West Gateway.

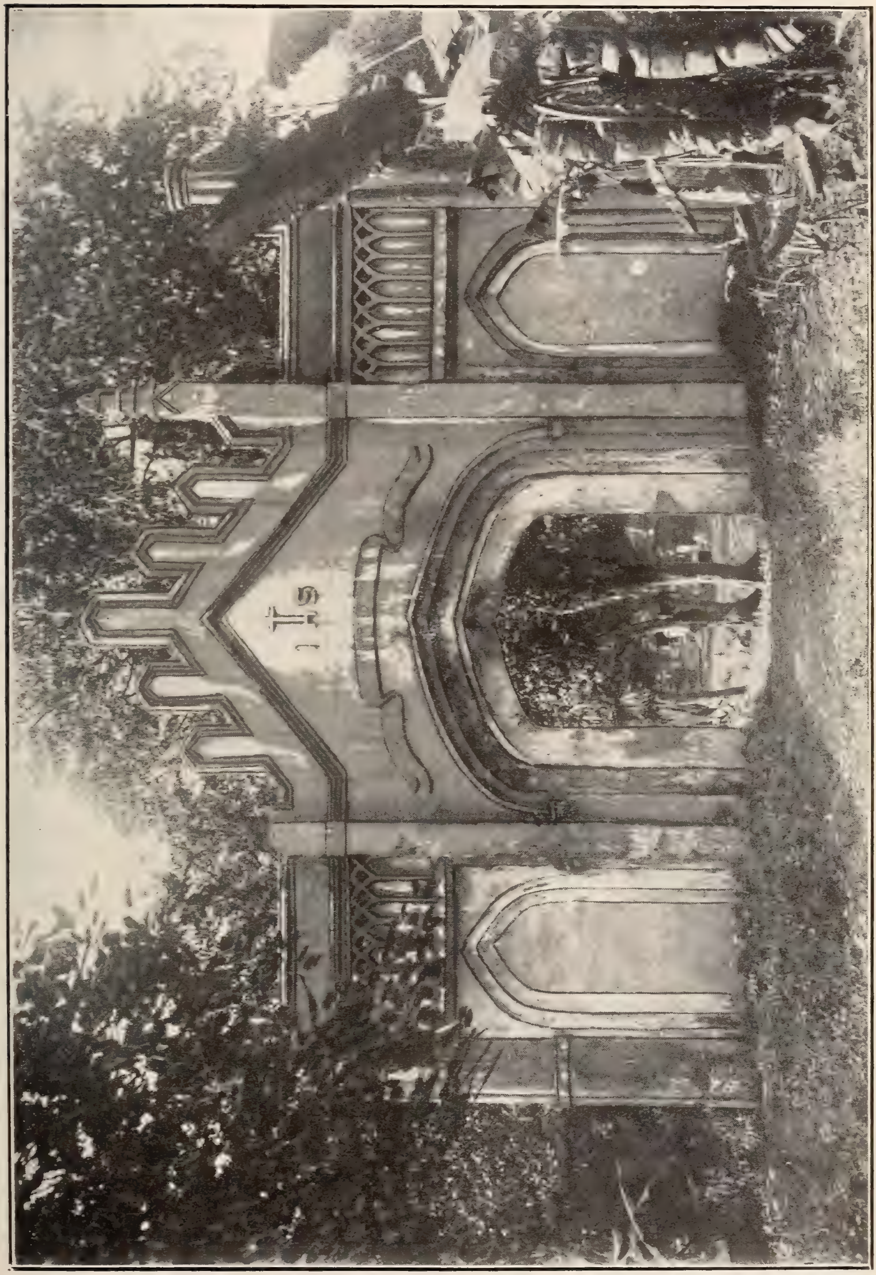
Pl. III. Tomb erected to the memory of the infant son of William Napier Esq., Lieut. Governor of Labuan.

Pl. IV. General view of section 'B' of the Cemetery.

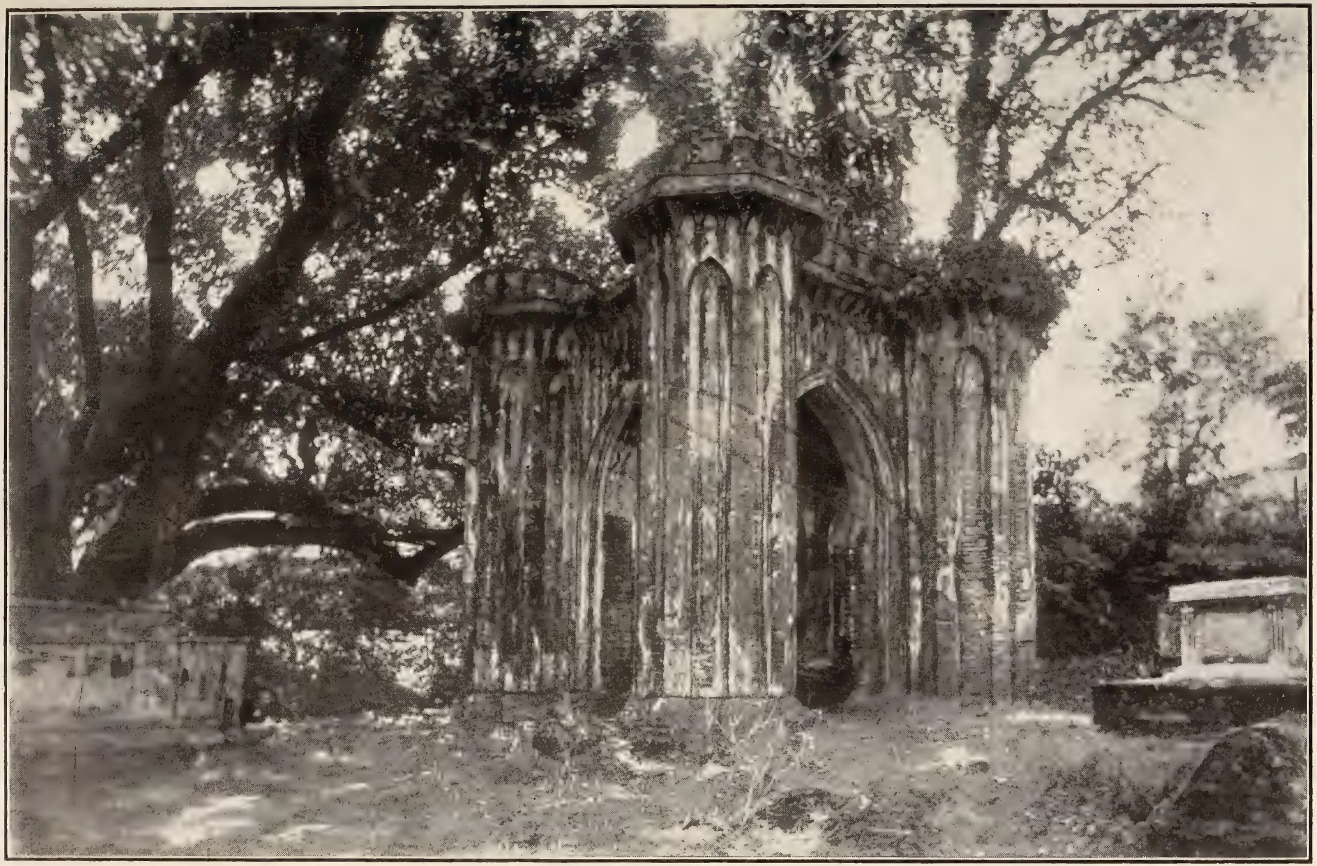
Pl. V. Tomb in the centre of the picture: erected to the memory of the Officers and Men of H. M. S. 'Niger'.


SECTION "A"
SECTION "B"
SECTION "C"
SECTION "D"
FROM TOWN

PLAN OF THE CEMETERY ON FORT CANNING SINGAPORE.



FORT CANNING CEMETERY, SINGAPORE.



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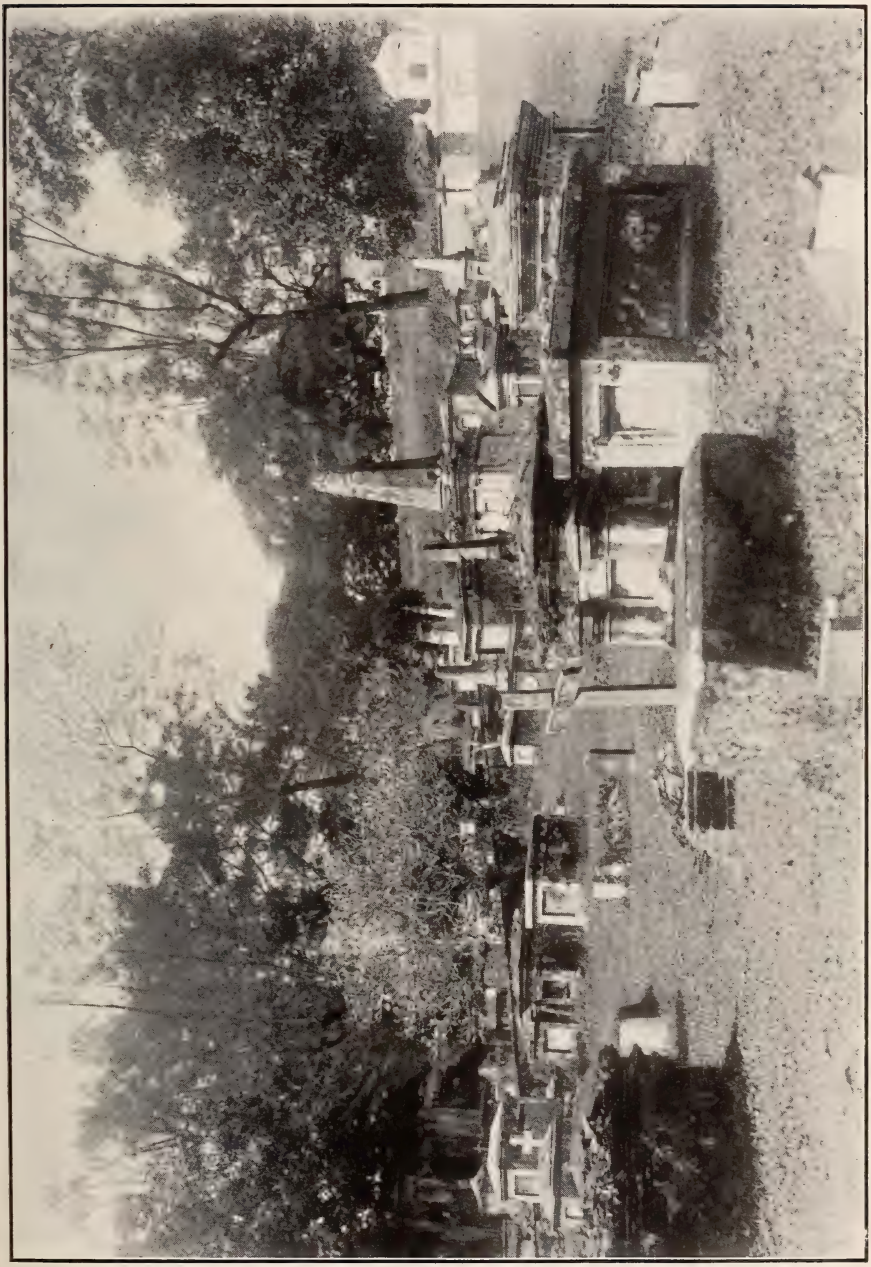

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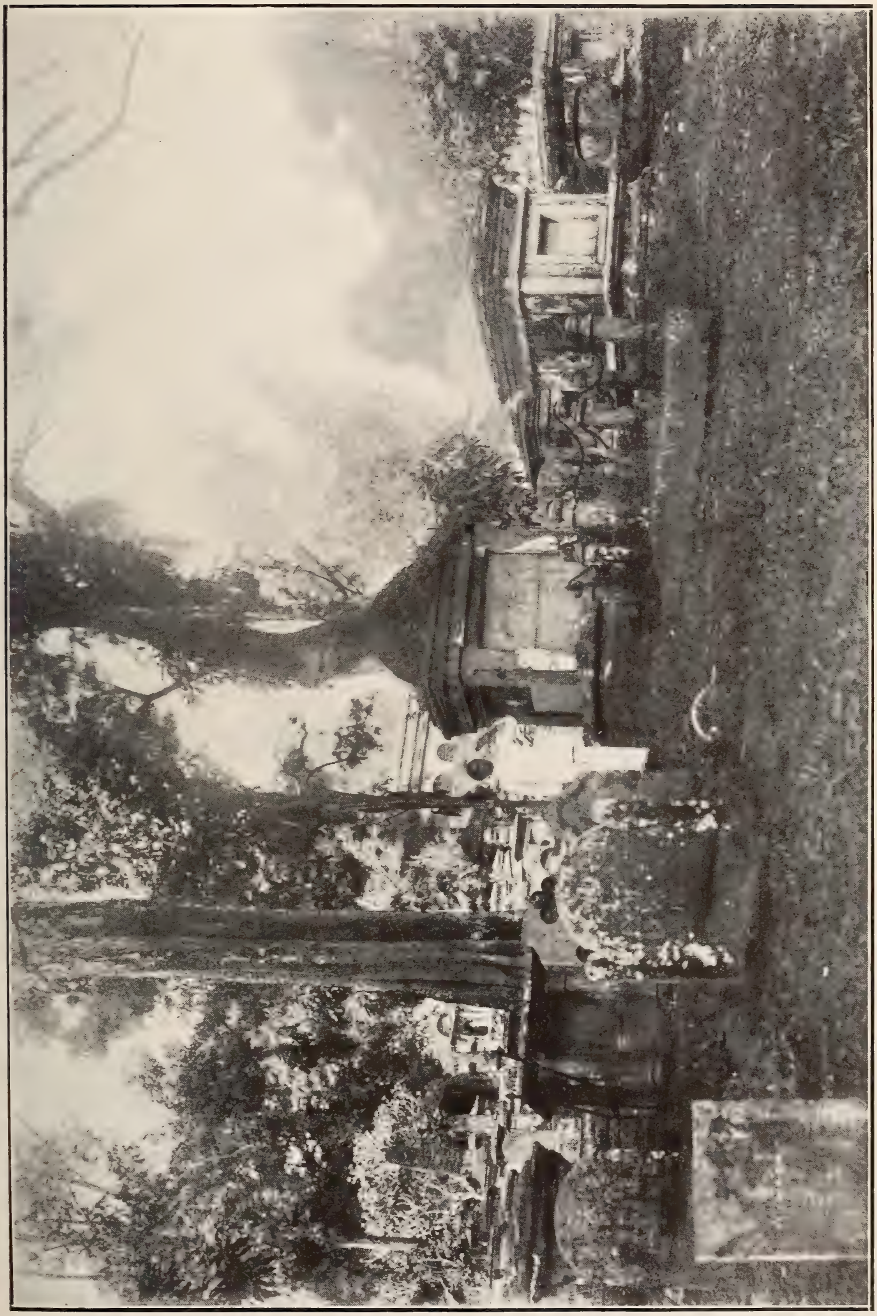

FORT CANNING CEMETERY, SINGAPORE.

STRAITS BRANCH
ROYAL ASIATIC SOCIETY

[No. 62-63]

JOURNAL

December, 1912.

230986

Agents of the Society

London: Messrs William Wesley & Son
28 Essex Street, Strand
London, W. C.

PRINTED AT THE METHODIST PUBLISHING HOUSE SINGAPORE

[No. 62]

JOURNAL

of the

Straits Branch

of the

Royal Asiatic Society

December, 1912.

SINGAPORE:
Printed at The Methodist Publishing House.
1912.

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Some notes on the Kelantan Dialect, and some comparisons with the Dialects of Perak and Central Pahang.

BY A. J. STURROCK.

The variations and differences of dialect are of course found in

1. Vocabulary.
2. Pronunciation.
3. Distinct usages of word and phrase.

1. Vocabulary.

In this respect the dialects of Perak and Pahang are little different: the Kelantan dialect differs widely from both. Taking in the first place the personal pronouns.

(*a*) "I" is in Perak	sahaya tĕman aku.
in Pahang	sahaya kawan (colloquially).
in Kelantan	sahaya hamba (most common colloquially).

Thus the word "sahaya" is found in all three dialects, but its use in Kelantan is very uncommon indeed, so uncommon that it is probably an imported word. It is useful as a polite and less humiliating variant to "hamba" when an inferior is addressed. The word "tĕman" is unknown in Kelantan: and "kawan," though found, is clearly an importation from Pahang

In the written language "beta" is used in Perak, "sahaya" and "kita" in Pahang, and "kita" in Kelantan. Of course this is not a rule without exception: for as the customs and language of the more advanced West become known in Kota Bharu, so the variants of the other states are found gradually to creep in both the written and spoken dialect. Perak is acknowledged to be the leader of fashion and to be worthy of imitation in most respects.

(*b*) "You" is Perak in	mika kamu.
in Pahang	awak.
in Kelantan	kita (polite). diri mu (much as kamu is Perak). kamu (which is coarse).

This use of kita may be common to the Northern States, but it has not come to my notice except in Kelantan. "Diri" is also quite commonly used: and "mu," rather coarse, is purely colloquial, and would always be used in conversation with inferiors and young people.

(*c*) He, She etc. The Malay expressions are the same in all three dialects:—but in Perak and Kelantan "dia-ma" colloquially pronounced "deema," is the ordinary plural. In Pahang I never once heard this expression. In Perak only have I noticed similar forms in the first and second persons, as "sahaya-ma" and "kamu-ma."

In comparing the dialects of Perak and Pahang as regards differences of vocabulary, these, I think, are comparatively few. In Pahang we find the word "molek" in common use, where both "elok" and "chantek" are used in Perak: "sĕlalu" is found where in Perak "langsong" is employed: and the use of "rajin" is common where in Perak "sĕlalu" is the expression found, *e.g.*, "ta' rajin" means "never." The most common expression in Pahang for "every" is "sa-bilang," *e.g.*, "sa-bilang hari" which means "every day." "Often" in Pahang is "kĕrap," usually "kĕrap kali:" in Perak we find "galak" or "galak kali" employed: while in Kelantan again we find the expression to be "achap" or "achap kali." In Pahang, instead of the expression "punya" signifying possession, the Arabic "hak," literally meaning "possession" or "property" is used: and it frequently takes the place of "yang" (relative pronoun) as well. Only in Pahang have I heard the word "chamchah" used for "spoon:" and in Pahang and Kelantan the word "sĕrampang" for "fork." The word "lalu" in Pahang has an adverbial use as well as its ordinary signification, *viz.*, meaning "absolutely," *e.g.*, "ta' guna lalu." meaning "absolutely no good:" "habis lalu," "absolutely finished" "Amat is generally used in Pahang where in Perak "tĕrlampau," "sangat," or "sakali" would be used. To intensify "amat," "sangat" is added.

The Kelantan dialect differs widely from both Perak and Pahang dialects. It is the least pure of all the Malay dialects I know, and intermingled with Siamese and even Chinese expressions, though the latter are comparatively few. There are many other alleged Malay ds, which as far as my experience goes, belong to Kelantan alone, ugh it is possible that they are used in other Northern Malay States. I have mentioned the personal pronouns, and in this connection I must not forget to state that the word "awak" for "you" is accepted as being quite polite, but no Kelantan Malay cares to be addressed as "kamu." It may be for this reason that Court charges always employ the expression "kamu!" "Hamba" is practically the one colloquial word for "I" as is kita in written form.

I give a list of Kelantan words with meanings as types of the difference in dialect.

English or Malay.	*Kelantan Malay.*
To see	Kleh, bĕrgari.
To hasten	hunggal
List	sĕnarai
To take census; make a list	sĕnaraikan

Notice, notification	pĕrwawai
To be unwilling	ta' ser (only used in negative)
To weep	tĕriak (seldom tangis)
Foolish (bodoh)	babok
Mattress	lembek
To petition	mĕngĕting or mĕngenting
Pĕnghulu	To' kweng
Lawyer	pĕnghulu
sĕmpadan	tapang; mĕntara
The late (deceased)	gĕmolah
bĕrsilat	gayong
Feast for dead	bewah
janda	bujang
tin (receptacle)	kopi
gila	gong
plan-plahan	kohor
capture	egat or egak
appeal (against a Court decision)	utun
Court case	guaman or bichara
Criminal case	bichara jĕnaiah
Civil ,,	bichara mal
Party to a case	anak guaman
To be party to a case	bĕrguam
To give judgment	kĕrat bichara
A judgment	kĕratan
gaol	gok
dukong	kekong
balek	kĕlik, kĕlit
a cent, a piece	mĕnunggal
marah	mureh
kĕrani	sĕmayan
throw, champak	tĕhok
now	loh ini
quickly (at once)	lolor-lolor
many	sangkang : bĕlanar : chĕmak
proud	pongah
shaky with fear	kĕnaling
batas (large with a path on top)	tandak
tĕngkolok	satangan (form saputangan uncommon.)
money	pitis (lit. the small leaden coin worth $1/480.)
mĕlĕngong	tĕrchokoh
manggis	mĕsta
jambu golok	kĕtiri
mata kuching (fruit)	gĕdu-gĕdik
kundang (fruit)	sĕtar
lada hitam	lada bĕnang

silau (of sun)	bĕchar
makan jamuan	panggilan
pĕda	budu
buah kĕtapi	kĕchapi
aran	tamban
kraiong	nĕring
sirat jala	jahit jala
sĕgar	siar
jalor tanah	ruangan, or wangan tanah
bĕlĕbas	jĕrĕjak
to suckle	mai (pron. with nasal accent)
kĕrol	bojing
sireh sa-kapur	sireh tĕmat
,, ,,	sireh sa-piak
mĕminang orang	bawa sireh
pagar tĕnggalong	pagar musang
matches	pĕnggesek api
,, , to light	kecheh
korang hĕrti	korang chĕrak
mĕnchĕpar	mĕjĕriat
notice, to affix	tepek
finger-print	tepek tangan

I give these as examples, compiled, as will be seen, without system, just as they occured to me or were brought to my notice I can give many more if required. The examples which I know to be Siamese are jĕnaiah, utun, kweng, guam, and also such words as "wat" a Siamese temple ; "sam" a Siamese Court-house ; "sĕmayan," a clerk : and I suspect also that sĕnarai, gong, gok, and others are of Siamese origin. The Chinese negative "bo" is in quite common use.

II. Pronunciation. I should be inclined to put the dialect of Pahang, Central Pahang at least, first as regards normality of pronunciation.

the final—ar	pronounced as	—or, as in bĕsar bĕnar pron. as bĕsor bĕnor.
,, ,, —ul	,, ,,	—uï, as in bĕtul, pron. bĕtuï.
,, ,, —us	,, ,,	—oë, as in bagus pron. bagoë.
,, ,, —ir	,, ,,	—ior, as in hilir, pron. elior.
the final—a	pronounced as	—ë, as in mana pron. as manë, or as the French —eu.
,, —al	,, ,,	—ai, as gatal, pron. gatai.

The Pahang dialect is spoken almost as written, though a few a few eccentricities may be noted. Final—l is slurred over but is not absolutely mispronounced as in Perak. Thus the word "gatal" is pronounced almost as "gata:" but the impression is left of something more than "gata," as if the tongue were trying to overcome the difficulties of the final—l, and just failed to do so. The final-ai and-au are also slurred, and are pronounced almost as—a. They approach therefore towards the pronunciation of the final which explains why we sometimes hear of a sungal or a kĕdal when a sungai or a kĕdai is meant.

Kelantan pronunciation is eccentric in a different direction from both the Perak and the Pahang dialects.

1. Suppression of—n before another consonant: *e.g.*, Kĕlantan is pronounced Kĕlatan: jantan is pronounced jatan. Similarly bangku is pronounced baku, and bĕngkak, bĕkak. Here again the impression is left of almost futile striving to pronounce the word in full. On the other hand—n and—ng are frequently inserted in writing where their use is incorrect and superfluous, *e.g*, bĕngkas for bĕkas; this error is only found in writing, and is possibly due to the knowledge of the opposite fault and to a desire to avoid it at all costs.

2. Suppression of—m—in a similar way, again with the counter-error in writing, *e.g.*, tĕpoh for tĕmpoh: tapar for tampar: tĕpek for tĕmpek.

3. Final—an pronounced as—en, *e.g.*, Kĕlaten for Kĕlantan; tuen for tuan. The—n is very nasal. Similarly—ang is pronounced—eng, *e.g.*, Paheng for Pahang.

4. Final -a pronounced as -aw, as in the English word "law," *e.g.*, manaw, apaw, for mana, apa. Similarly, -ah is pronounced as -awh, *e g.*, timawh, lelawh: and -ak as -awk, *e.g.*, Perawk, awawk, kakawk.

5. Final -t, -k, and -p are practically indeterminate. In the case of a word such as "achap" it is impossible to tell from the spoken word whether it is really "achap," "achat," or "achak." The word is generally written "achap," and so I assume that form to be correct. Again I am unable to determine whether the word meaning "to return" is "kelik" or "kelit." I presume the former to be correct, on the analogy of "balek," but as spoken it appears to my ears more to resemble the second form given. This confusion does not always exist, however: it only presents itself in, comparatively speaking, a few cases, but the fact that it exists at all seems to be worth nothing.

6. Final -ng is frequently softened into -m, I find a good example of this error in the Malay programme of Sports held in Kota Bharu on the occasion of the Coronation of the present King. The sentence occurs, "Jika tiada pakaian seperti yang tersebut itu, memadai-lah dengan baju hitam leher tutup, dan seluar hitam kain *sarom* sutera atau bugis atau Trengganu chorak hitam diatas lutut" "I have frequently heard blakam used for blakang and even tuam for tuan. In this case again we find mistakes occurring in the opposite direction: for one regularly finds the word "bĕlum" pronounced and even spelt as "bĕlong." The latter error is readily explained by the nasal pronunciation prevalent in Kelantan: the former is no doubt the result of revolt against the

contrary error. An interesting example of the difficulty caused by the peculiarities of the spoken dialects of the Northern States is that mentioned by Mr. E. W. Birch in one of his articles to the journal of the Royal Asiatic Society, Straits Branch. In this article he mentions a discussion between himself, Mr. Hubert Berkeley, and the Dato Sri Adika Raja on the meaning of the name Klian Intan. The discussion was as to whether the name was originally Intan or Hitam. It is a matter which can never be decided, as in Kelantan at least there would be no difference in the pronunciation of the two words. The first -n of Intan would not be pronounced, and the first syllable would be undistinguishable from the first syllable of Hitam; while the nasal pronunciation of the finals -am and -an would be exactly similar.

7. Final -h is frequently pronounced as -s, *e.g.*, putes for puteh galas for galah, tujos for tujoh. I have noticed this in Perak; but there the tendency is rather to slur the final -s and make it approximate the sound of the final -h.

The Kelantan dialect has some curious clipped terminal affixes, tagged on at the end of words, phrases, and even sentences. *e.g.*, -dik or -dek often at the end of an exclamation or interrogation. No one appears to be able to explain it.

-gak is perhaps the most frequently used of all. It seems to be an intensive, but to possess little real signification or none at all. I have heard when playing sepak raga the phrase used, "Buleh Haji gak," intended to call the attention of the Haji in question to the fact that the raga had come to his foot. Again I have heard the phrase "Mari gak" used as a polite invitation.

-teh is another intensive. When used with an adjective, as "murah teh," "molek teh," it acquires something of the meaning of "bĕnar."

Another and even more curious expression is "keneh" I do not know what it means; so I shall merely give the example of its use quoted to me. It is as follows:—

"Balah 'tu keneh?" and is interpreted to mean "Bagitu-kah?" It is not only used in interrogation, however, as it would also be used in expressing agreement with the opinion of another person. So that the same phrase "Balah 'tu keneh," without the interrogation would simply mean "You are quite right." One informant told me that it was chiefly used in anger, but that is not so, and I only mention this fact to show how difficult it is to get a credible explanation of many of these obscure terms.

A combination which I have found only in Kelantan is formed of the term "sa-rupa" followed by the expression "lek-lek," the word denoting the object of the simile intervening. "Lek-lek" seems to add nothing to the meaning of "sa-rupa," but simply to be an addition repeating without intensifying the signification. It may, however, have the meaning of "exactly" *e.g.*, "sa-rupa harimau lek-lek," which perhaps means "just like a tiger:" but so far as I know, it does not modify in any way the preceding phrase.

A phrase "lolor-lolor" which means "at once" may be akin "loh" as found in "loh ini," the Kelantan expression for "now." The interjectory "loh-lah" means "come on;" and I believe that these phrases are all derived from a common root.

Other phrases worthy of note are

siat gak,	which means	jangan-lah (not with a verb)
tiada sa-kĕteh habok	,,	tiada lalu *i.e.* there is none at all.
Balar-lah		no matter; tidak apa
sut dah		it is finished

These notes do not profess to be exhaustive, or to deal fully with any aspect whatever of the Kelantan dialects: nor do I make any claim to have discovered anything that was unknown previously. I have avoided words and phrases which are not in common use, and such as, being technical might not be known to any European in Kelantan. The compilation of the latter is secondary both in point of time and of importance. I have spelt many of the words phonetically as they sounded to my ear: and in many cases, as I have pointed out, the spelling is doubtful. My object, however will be attained if the publication of these notes induces others to set down and publish the result of their observations. In this way alone can a solution be found for many of the difficulties in form and spelling which now exist.

Gunong Tahan and Gunong Riam

By J. B. Scrivenor.

With plates I—IV.

So little has been written about the mountains of the Malay Peninsula that there is small reason to give any excuse for the following pages concerning the two highest eminences in the country, Gunong Tahan on the borders of Pahang and Kelantan, and Gunong Riam, better known as Gunong Kerbau, on the borders of Pahang and Perak. The paper is the outcome of a recent ascent of Gunong Riam, and the opportunity of comparing it with Gunong Tahan, which I ascended in 1906, and other peaks that I have visited in the Malay States.

The height of these two mountains was in 1906 believed to be:—Gunong Riam 7160 feet: Gunong Tahan 7050 feet, but the latest determination for Gunong Tahan makes it 7186 feet and therefore higher than Gunong Riam. For this figure I am indebted to the Surveyor-General, Col. Jackson.

I may as well say at once that no claim to "mountaineering" adventures is put forward in this paper. After having ascended four of the highest peaks in the country I know that the journey up any one of them is best described as a rather stiff up-hill walk with an occasional scramble among the thick vegetation. I have not yet seen one place that cannot be easily negotiated. The Saddleback on Snowdon and the Striding Edge on Helvellyn are more thrilling than anything I have seen on the Peninsular Mountains. I expect the limestone hills, however, as being capable of affording any amount of climbing exercise, but they can hardly be called mountains, and generally speaking, little is gained by climbing them. I shall never forget my feelings when once invited to go up a vertical cliff of limestone clinging to one slender creeper. Recollecting that the nearest hospital was five days journey away, I declined.

It has been my practice when travelling in the Peninsula to attend strictly to my own work and to avoid giving way to the temptation of dabbling in scientific subjects other than my own. This is because I have no reason to suppose that a geologist's zoological or botanical observations are one whit more valuable than a zoologist's or botanist's geological observations. Therefore, beyond an occasional remark, the accuracy of which is not guaranteed, concerning the fauna and flora, I have little to say of a scientific nature; but I believe that a plain narrative of the journeys will prove to be of some interest. The determination of heights of peaks also has been left to those best qualified to give an opinion on the subject, and I have therefore refrained from burdening myself with a heavy theodolite.

GUNONG TAHAN.

Gunong Tahan has been, and perhaps still is to a certain extent, wrapped in the mantle of romance. This is not peculiar to Gunong Tahan alone, however, of the features of northern Pahang, for there was once a strong belief in the existence of a mountain chain between Pahang and Kelantan that trended east and west, of which Gunong Tahan was a part; and as the belief in this range crumbled away, so did the supposed height of Gunong Tahan, originally, if I remember rightly, stated as about 20,000 feet, descend rapidly down the scale, until now it is known that it is only a little over 7,000 feet.

Nevertheless, Gunong Tahan has always been an attraction for travellers, probably because of the Malay stories of the difficulties caused by Jins to prevent anyone reaching the top, and in 1905 certainly, perhaps earlier, the summit was reached. I say perhaps earlier than 1905, because in 1902 Mr. John Waterstradt claimed to have ascended the mountain (vide this Journal No. 37, 1902, pp. 3—27), and I, for one, am not prepared to say that his claim is unfounded; but unfortunately the record of his journey is hard to follow. Several men have attempted to ascend Gunong Tahan—one, H. M. Becher, lost his life in the Tahan River, while another suffered severe privations and was forced to turn back, narrowly escaping disaster. But the size of Gunong Tahan compared with the great mountains of the world, and the facilities given by the vegetation, are such that its ascent can hardly be accounted a feat of mountaineering. The unavoidable difficulties met with are those of transport of baggage, and it is the writer's opinion that the only display of pluck was shown by the leader of the 1905 expedition, who, although about to retire, and in none too good health, determined to attempt the ascent before leaving the country, an attempt that was defeated by serious illness on the journey from the Tahan River to the ridge of Gunong Tahan itself.

If we consider Mr. Waterstradt's claim as a separate question, the honour of first ascending Gunong Tahan belongs to certain Malays with the 1905 expedition, Che Nik, Mu'min, Mat Aris, and Bulang (for an account of this expedition see Journal F.M.S. Museums, Vol. iii, 1908). I met these men in the following year and one of them, Bulang, guided me to the top.

In 1906, thanks to the timing of the attempt, the lightness of the baggage, the willingness of the Malays with me, and the well-worn paths, the ladders and the huts of the 1905 expedition and a still more recent party headed by Mr. J. C. Sugars, the ascent of Gunong Tahan was made without any serious difficulty being encountered or any hitch occurring with the men. The ascent was, in fact, a picnic.

Starting from Kuala Lipis, I soon reached Kuala Tembeling, where I interviewed the genial Penghulu, Penglima Kakap Hussein, and obtained through him the services of three Tembeling Malays for the journey. After ascending the Tembeling River for two days the Kuala of the Tahan River was reached and the compact little expedition disposed itself in a dug-out to face the laborious business of ascending the Tahan River. The three Malays were ample to manage the boat and to carry up the mountain sufficient food to sustain the whole party for some days. The baggage consisted of a few cooking utensils, a quantity of plain food, a thin jungle mattress, blanket and mosquito-net, and various spare garments, all wrapped up in three light waterproof sheets, making three convenient bundles. The men's rice, on which I claimed the right to draw, was included with the other food. The three bundles of baggage were placed on a small bamboo deck in the dug-out, and I made myself as comfortable as possible among them. The absence of any firearms was the cause of some expostulation from Kakap Hussein and the men, who assured me that there were many enemies to be encountered, including dragons.

The three Malays with me were Bulang, the guide, Mat Jeher, and Mat Riflin. Bulang was a short cheerful little fellow who always looked on the bright side of things. Mat Jeher was of a different mould, not particularly pleasant to look upon, he was intensely ignorant and therefore superstitious. He had not been up the mountain before and was obviously very perturbed in his mind about the fate that would overtake him. The third man, Mat Riflin, was, and still is, the pleasantest Malay that I have ever met. He was then about 24 years of age and had received sufficient education to discuss the works of Abdullah and the literature described as "Malay Readers."

The expedition, with a leader who knew enough to recognise the wisdom of being led, began the journey up the Tahan River on the 11th of May. The Tahan River is not the most navigable river in the world, and although in Europe it would not attract notice on that account, because no one would attempt to navigate it, being of much the same nature as a rocky trout stream in mountainous country, here, in the Malay Peninsula, what might be held out in the United Kingdom as a lure to trippers, become objectionable features that must be surmounted if one would proceed. There is one long still reach; the rest is all rapids, nothing really bad in the way of rapids, nothing to compare with the rapids in the Tembeling above Kuala Tahan for instance, but still enough to necessitate frequent unloading of baggage and hauling the boat over rocks. What the distance to Kuala Teku, where one leaves the boat, may be, I do not know, but it took our lightly equipped party three days to arrive there. The dryness of the season may have made our progress slower than it might have been otherwise.

Apart from the beauty of the Tahan River, flowing over its rocky bed through an avenue of magnificent jungle trees, two things associated with it have left a strong impression on my memory. One was Jeher's nightmares. On our way upstream we slept in little sheds built by gutta-hunters. They were most conveniently placed, and as there were no mosquitos, the inability to hang up a net inside them did not matter. But we were closely packed, and when Jeher suddenly leapt up the first night, yelling "we're sinking, we're sinking, Allah help us, we're lost entirely" or words to that effect, we all woke up in alarm. But only that once. Jeher had nightmares every night afterwards, being chased by dragons, crushed by irate Jins, or falling over precipices, but he got no sympathy. The first yell was the signal for an onslaught by the remainder of the party that must have made his waking dreams very realistic.

The other remarkable thing about the Tahan River is that some one once announced he had counted the rapids and made them 99. This makes the head swim with wonder, first that anyone should think of counting the rapids at all, secondly, how he found out where one rapid ended and another began, and thirdly why he did not make the number 100. There is a story that another traveller shot a gibbon on the banks of the Tahan River and was punished by the Jins with madness which caused him to take his clothes off (where he took them off, or when, is not stated). Perhaps the counter of rapids committed a similar crime and was punished by being afflicted with a hypersensitive conscience which forbade him to reach the country.

Having arrived at Kuala Teku we found two men belonging to a party of Survey Coolies who had started up the mountain that day with a Trigonometrical beacon to be erected on the summit. One of the men left behind at the Kuala was suffering from dysentery. Fortunately I had a few tins of milk with me which I left with him, and, whether it was the milk that cured him or not, was glad to find on my return that he was well. We slept the night at Kuala Teku, and on the following morning started up to the first camp. This was a very short march, and I am convinced that the ascent of the mountain by this route could be done in shorter time by going farther the first day ; but it had become the recognised thing to halt after only three hours climb, the excuse being water difficulties, and I was not in a position then to tell the men that we could reach water farther on.

The ascent to the first camp, where there was a large shed, erected by the 1905 expedition, is steep and somewhat slippery. This was the cause of an amusing and unusual sight. The survey coolies who had gone ahead of us had been warned that they should wear boots on account of the bare rocks on the high plateau-land of the range. They started with boots, but floundered about to such an extent on this soft slippery ground that they took them off, and, instead of carrying them with them, left them, hanging in the trees, a piece of folly that they bitterly regretted when they reached the top of the range. One man, I learned, was so overcome by having to carry an iron support while walking unshod over bare rocks, with abundant sharp quartz crystals, that he sat down and wept. I remember a similar occurence near Kuantan, when a Malay whom I was trying to persuade to cut down a tree, work he had been hired to do, sat down and burst into tears, telling me that the axe was hurting his hands.

The jungle as far as the first camp seemed to be much the same as the jungle below, except for the abundance of a fine palm with broad leaves, usuful for building huts. These the Malays called *Pokok Dongkok.* At the first camp, however, situated on the top of a spur, there was a marked change in the vegetation, things looking like conifers making their appearance. I have seen similar plants up other mountains in the States.

The view from the first camp was very fine. One could look over the broad tract of lowlying land drained by the Pahang River and also over the belt of hilly land formed by the great outcrop of quartzite and conglomerate, of which the Tahan Range is part. Far away could be seen Gunong Sinyum, the huge limestone hill on the left bank of the Pahang River. Looking towards Gunong Tahan, big cliffs were visible which I was told by Bulang were on "Gunong Gedong." I passed over no other mountain on my way to Gunong Tahan and gathered on my return that the name was merely a nickname bestowed by Malay coolies on part of Tahan, on account of its shape. The mention of this name as belonging to a distinct mountain unfortunately led me to a serious misconception as to the lay of the land at the time of my visit.

After a comfortable night, broken only by the usual onslaught on Jeher, we set out again, plunging down into a ravine and rising on the other side to a long ridge separating the valley of the Teku, and, I believe, the Ulu of the Tahan River. We had to walk along this ridge to reach the elevated plateau-land of the range, some of which we could now see. How long this ridge is I hesitate to say, knowing how easy it is to exaggerate. Perhaps two miles would be near the figure, and were it not for the vegetation, I can quite believe that the passage might be a thrilling experience. The view was magnificent. On the right was a great curtain of vegetation in many hues of green falling away from the ridge with billowing undulations. On the left was the precipitous valley of the Teku with vertical cliffs that gave the impression of a huge canyon. On the other side of the valley was a great stretch of high, but plateau-like country of which Gunong Ulu Kechau is, I believe part. The valley of the Teku, as seen from the ridge, and from the high land beyond, is a sight of which I have never seen the equal in the Peninsula. The cliffs, the great depth of the canyon, and the waterfall at its head, mark it as something distinct from all the other valleys that I have seen during my travels in the Malay States, and it has always been a matter of regret that when I saw it I had no camera with me. It would be difficult to do justice to the scene, however, even with a camera. The rough sketches on Plate II will perhaps convey some idea of it.

At the end of the ridge a short scramble up a cliff brought us to the plateau-land. Here we left the big jungle behind us and found ourselves in new surroundings. Low shrubs, the larger ones showing the influence of the strong winds, bare rock, and here and there a thin covering of peat, gave the impression of moorland, but in place of heather were strange bushes and the smaller plants were pitcher-plants, orchids and other things that I will not venture to name. One comon orchid had a small pale-green flower, and I was much taken with a large bright yellow flower that I learned afterwards was a rare orchid found previously on Gunong Bubu. I do not remember seeing any rhododendrons, but as I would only be likely to notice the blossoms, there may have been hundreds of bushes.

From the plateau we had a good view of Gunong Tahan (Fig. 1, Plate III) with fair sized trees in the shelter of a depression in the foreground. This I noticed elsewhere on this journey : that in gullies where the strong winds could not be felt the vegetation was bigger. The posts seen on the left of the sketch were put up by the 1905 expedition.

Leaving the plateau-land we dropped into the valley of the Teku above the waterfall and followed up the stream, jumping from boulder to boulder, until we arrived at a big pool at an elevation of about 5000 feet, where the Teku was joined by a tributary. This was immediately below the ridge leading to the summit of the mountain, and here we camped for the night. I enjoyed a delightful bathe in the cold water of the pool, but Mat Riflin was the only one of the Malays to join me.

The following morning a short climb brought us to the top of the ridge of Gunong Tahan. There is a little flat land even on the top of this ridge, but I doubt if it could be utilized. From the summit we could see another big mountain to the north, afterwards identified as Gunong Ulu Kamua, and to the west, far below us, a range of limestone hills that I judged must be the limestone hills marked on the Royal Asiatic Society's map in the Ulu of the Tanun. As it was evident that a clear view of the whole Tahan Range, or nearly the whole of it, could be obtained from these hills (the Cherual limestone hills, *vide* the Geology and Mining Industries of Ulu Pahang, Plate IV) I determined to visit them later on.

During the return journey to the Kuala of the Teku my men made a collection of the abundant quartz crystals that one finds scattered over the surface and in veins in the rock. They call them "*intan*," and it is probable that these sparkling, but worthless stones, seen long ago by some forgotten Malay or aboriginal, are partly responsible for the Malay notion that the Jins on Gunong Tahan guarded a treasure of precious stones and gold. I might remark in passing that I have seen in the Ulu of the Tembeling a Jin who once lived on Gunong Tahan, but who was hurled down and turned into stone by the presiding Jin for insubordination.

THE TAHAN RANGE AS SEEN FROM THE CHERUAL LIMESTONE HILLS.

In July of 1906 I was able to visit the Cherual limestone hills, seen from the summit of Gunong Tahan. The journey up the S.

Tanun was made in a dug-out with a crew of Malays recruited in the neighbourhood of Kuala Tanun. This crew was the worst I have ever had. We arrived at our destination without serious mishap, however, and I landed at the little-known Kampong Cherual, not far from the Kelantan border. It consisted at that time, as far as I could discover, of only one house, therefore it was an easy matter to find the oldest inhabitant. He was an old, but still active Malay named Yusuf bin Sleiman, who had, he said, lived there for over twenty-five years. It was clear then that he was just the sort of man I wanted to tell me the names of the mountains and the course of the rivers in the neighbourhood, so I persuaded him to show me a way up the north end of the Cherual limestone hills to a spot where we had a magnificent view of the Tahan Range, and where I obtained the hill-sketch shown in Plate 1.

The names shown in this hill-sketch were all written down at the time of making the sketch at the dictation of Yusuf bin Sleiman, and I was careful to get him to look along the compass sights in order to avoid mistakes. The synonyms were given me by him also, but it is interesting to note that although the name Gunong Tahan was recognized, he and the other inhabitants called the mountain Gunong Rotan. They also knew it as Gunong Ulu Tanun on account of the S. Tanun, so I was informed, rising on its flanks. This raises an interesting question about the Kelantan-Pahang boundary, which is determined by the watershed of the Kelantan and Pahang Rivers. The exact boundary will not be fixed until the country is surveyed in detail and it will probably be difficult to define on the west side of the Tahan Range, since the country between the Tanun and the Kelantan drainage is almost flat. The watershed runs about east and west, however, and is said by the Cherual Malays to follow on up to the summit of Gunong Ulu Kamua. On the west side of the range the drainage south of Gunong Ulu Kamua goes, they say, into the Tanun on the north and the Kechau on the south. The course of the Tanun near Cherual certainly supports this statement, and also the statement that it rises on Gunong Tahan. On the east, however, there is reason to suppose that the Kelantan-Pahang boundary runs southward along the Tahan Range as far as Gunong Tahan, and then turns eastward as the watershed of that great tributary of the Pahang River, the S. Tembeliug.

The country between the Cherual limestone hills and the Tahan Range is gently undulating, and it appeared to me that a great mistake has been made in attacking the mountain from the Tembeling side. Waterstradt is the only traveller I know of, who has tried the ascent from the west, if I understand his account of his journey correctly. By this route one could be at the foot of the range in four days easily from Lipis, whereas the journey from Lipis to Kuala Teku takes at least six days. Moreover the Tanun has few rapids, whereas the Tahan is barely navigable for the smallest boats.

TAHAN AS A HILL-STATION.

This comparison of routes leads on to the question of the utility of the Tahan Range as a hill-station. In an appendix to the account of the 1905 expedition in Vol. iii of the Journal of the F.M.S. Museums, I ventured to say that the range would make an ideal health station (p. 74). A reviewer found the remark a source of humour at the time, but now that the establishment of a health-station is actually being discussed, my critic, if still in the country, has probably changed his mind. Anyone who knows the cramped conditions of our existing hill stations would see quickly the enormous advantages of the Tahan Range; the great expanse of open and comparatively flat country, the elevation (between 4,000-5,000 feet), and the abundance of water. Instead of a monotonous walk along the same jungle paths day after day, shut in by huge trees, on the Tahan highland a delightful holiday would be possible roaming over a fair substitute for moors. Perhaps distance has tended to lend enchantment since 1906, but others who have visited the range seem to be of the same opinion as myself, with the result that, as already stated, the establishment of a hill-station is being discussed. The feasibility of the plan depends on the extension of the Pahang Railway, and I hope that that extension will pass between the Cherual limestone hills and the Tahan Range, connecting with a funicular railway up to the highlands.

GUNONG RIAM

Gunong Tahan, far away from roads and, at present, from a railway, has been visited by few Europeans, and even seen by few Europeans. Gunong Riam, better known as Gunong Kerbau, on the other hand, is a familiar sight to dwellers in Kinta, raising its sharply outlined ridge high above the little town of Tanjong Rambutan and plainly visible from the greater part of the district. He would be an unobservant traveller, who on a clear day failed to notice its giant form while passing Tanjong Rambutan in the mail-train.

Although deprived of its pride of place as the supposed highest mountain in the Peninsula, Gunong Riam always attracted me as a climb for several reasons, and in February of this year (1912) I made the ascent. Since my trip to Tahan I had climbed Ulu Kali in Selangor and Berembun in Perak, but a long interval had elapsed since the last long mountain trip, which perhaps was the reason that I relied on a Malay Penghulu to make necessary preparations for me at Tanjong Rambutan, so that I might go to the town by train and start up the mountain without delay. The Penghulu was approached through the proper channel and promised to have a guide, men, and elephants ready on a certain day. I had been told that elephants were always taken part of the way and therefore asked the Penghulu to hire them, although travelling with them is to court misery. On the appointed day I proceeded to Tanjong

Rambutan and found nothing whatever ready. I then had to make my own arrangements, and having heard, fortunately, that elephants could go but a short part of the way, looked out for a guide and men only. Five days later a heavy fee had secured a guide, who left his work to accommodate me, and six Malays to carry baggage, including a small tent. Everything was ready by 8 a.m. and having already committed one foolish mistake by putting my trust in a Penghulu, I proceeded to make another by allowing the six men to go by a so-called short cut over a hill, while Midin, the guide, and myself, with a Chinese boy and a Malay employee, took the regular route up the Kinta River. We were to camp that night near Kuala Termin, a short march but a recognized halting-place, like the first camp on the way to Tahan. Never shall I forget that day. The details would be painful to relate : suffice it to say that after waiting four hours for the men to emerge from their " short-cut," I found them cooking rice by the side of the Kinta River, and, of course, complaining about the weight of the baggage. The rice was not eaten. After this experience I displayed a fondness for the society of these Malays that surprised them, and they were always in front of me until the last day of the descent. One of these gentlemen appears in Fig. 1 of Plate IV. The size of the bundle he is carrying is worth nothing. He was an ex-police man, I was not surprised to hear it.

The camp near Kuala Termin was only about 700 feet above Tanjong Rambutan and situated on the right bank of the Kinta River. Midin was expecting some Senoi men to join us there and had asked me to bring tobacco and rice to give to them as pay. The Senoi, five of them, were there on our arrival, and helped themselves liberally to the articles mentioned and then went home. The necessity of six Malays *and* five Senoi had not dawned on me when this happened, but nevertheless the conduct of these men, whom we never saw again, and could not trace to their houses, seemed reprehensible. However, by the following morning Midin had caught three others, and we set out up the Termin a party of thirteen. The Malays, as usual, when Senoi men are with them, made the latter carry the greater part of the baggage. It was as well, because if I had had the Malays only we would never have arrived at the top.

On the second day we passed by a Chinese tin-stealers' *kongsi*, and then rose to 2,900 feet above Tanjong Rambutan, camping by the Batu Salik, a huge mass of granite with a small gully close by wherein is the cross erected in memory of J. A. A. Williams, who had ascended the mountain and died from fever on that spot in 1892. The march to Batu Salik was another short march, and on the following day I had the prospect of getting the men up the remaining four thousand odd feet in one march. It does not sound difficult of accomplishment, but anyone who had seen my Malays would have understood my anxiety. We started at 8 a.m. and I arranged that the men were to climb five hundred feet at a time with a rest of five minutes between each instalment. Shortly after leaving camp one of the men sat down, but got up again when the programme was explained to him. It proved an excellent plan, for we arrived at the Trigonometrical Survey beacon on the summit at 12.40.

Very soon after leaving Batu Salik we emerged from the dense jungle onto the ridge marked by the dotted line in Fig. 2 of Plate III, which leads up to the summit. The vegetation on this ridge is low and in several places one can walk along enjoying a perfect view on either side over the bushes (vide the foreground in Fig. 1 of Plate IV). On other parts of the ridge, however, we plunged through vegetation such as that shown in Fig. 2 of Plate IV and there was one part where we walked in a bower of mosses hanging from the short trunks and branches of stunted trees.

The most noticeable point about the vegetation was the abundance of rhododendrons and large pitcher plants. A bunch of rhododendrons is shown in Fig. 2 of Plate IV. As I write this I am in England and I was very interested on landing in comparing garden rhododendrons with those I saw on Riam. The flowers of the garden plants are perhaps a little finer individually, and they certainly grow in larger clusters. On account of the small size of the plants compared with the Malayan examples they make a better show of bloom, but the rhododendrons on Riam are nevertheless a beautiful sight and with judicious pruning could probably be greatly improved.

There were several other strange flowers, including a ground orchid, but nothing of much note as far as beauty was concerned. A very slender bamboo occurs that is probably the famous Malayan "Bulu berindu", but I have never heard a Malay admit the identity, although I have seen this slender bamboo elsewhere. Nor have I ever succeeded in persuading a Malay to take a piece down to a Kampong to try the affect. I remember once that after seeing the bamboo on another mountain I discussed the matter with one of the men. He decided that the bamboo we had seen could not be the "Bulu berindu" because it was so easy to obtain. The real "Bulu berindu" always had thunderstorms and thick clouds around it, while dragons and other ferocious creatures guarded the approaches. I met no dragons on Riam.

Fig. 1 of Plate IV shows the beacon on the summit of Riam. As can be seen from the photograph the mountain is an exposed place on which to camp and I do not remember many more uncomfortable nights than that spent there. The weather was unfavourable. It was clear when we arrived, but about 2 p.m. it began to rain and blow and continued doing so until 10 p.m. My tent was slung under the beacon but the cold wind found me out, and even after 10 p.m. it was bitterly cold. I put on two flannel shirts and my jungle clothes, including boots and putties, and crept under two blankets but still felt chilled. At 4 p.m. the temperature was 58 Fahr. What it dropped to afterwards I do not know, as I was too cold to get out of bed and look. Judging from the comparative comfort of sleeping in the open, and on the ground, in another country when the thermometer showed 12° of frost, the minimum on Riam that night might have been zero, but I do not suppose it fell below 54° Fahr.

I am unable to describe the magnificence of the view from Riam. I doubt if anyone could do justice to it. The great peaks around me in the main range of the Peninsula, and the cloud-filled valleys made a far grander panorama than the view from Tahan. One thing I will try to describe. Some time after midnight I woke up and saw the Southern Cross shining brightly. Later a crescent moon and a brilliant planet rose, showing up the dark outlines of Gunong Gyang and Yang Blar. Then these paled as the dawn broke and masses of pink clouds became visible in the valleys. The light grew in the east with a wonderful glow of red and orange, and, to my delight, showed up with perfect definition the distant Tahan Range as a black silhouette against the coming sunrise. The range was far, far away, but so clearly was it seen that it might have been a tiny ridge but a mile or so distant. Then as the sun rose above the horizon, the Tahan range disappeared in a shimmering blue haze, and the glory of the morning lit up all the surrounding peaks. I have never seen anything to equal that sunrise on Gunong Riam, and do not expect to see anything to equal it, but words cannot describe it adequately.

I have referred to this mountain as Riam although it is generally known as "Kerbau," and must now explain why. I had heard long ago that Riam was the correct Malay name but had also been told that a "Kerbau" had nothing to do with a water-buffalo, but was a corruption of a Senoi word meaning mountain, so that "Gunong Kerbau" would mean simply "Mountain Mountain." This I thought might explain the appearance on the new map, published by the Society, of the name "Korbu" for this mountain, which I had not heard before; but I learned from Midin, who had been up the hill on three previous occasions, and the Senoi men, that I was on the wrong track. The local Senoi word for mountain is, I was told, "*Jelmul*," which cannot possibly be connected with "Kerbau" or "Korbu." The Malay name for this mountain is "Riam" and always has been so; but once many years ago a Frenchman, not knowing this, ascended the mountain from Sungei Siput by a route following a stream called the S. Kerbau and therefore called the mountain "Gunong Kerbau." Hence, if my information is correct, "Gunong Kerbau" is a misnomer of French origin. I have some old literature that leads me to suspect the identity of the Frenchman, but the matter is not of sufficient importance to discuss here.

On our way down from the mountain we had an amusing experience at the tin-stealers' Kongsi, where we slept for the night. The tin-stealers had decamped at our approach and we found a commodious house wherein to cook our food, dry clothes, and rest.

But we thought it likely that the Chinese tenants might return at night to enter into possession again, not knowing we had elected to remain, and therefore, when about 10 p.m. we were aroused by a shout outside and the light of a torch, there was some excitement. I sat up and saw a fierce looking man advance and shake the bamboo door violently. He had a large spear with him, and I quickly realized that he was a Senoi. Then when the door was opened as romantic a group of human beings came in as could be imagined. The first to enter was the man with the spear. He also had a blowpipe, and was a short, thick-set, middle-aged man with a fine though savage face, who came in unconcernedly and sat down by the remnants of a fire. After him came two little children, two minute dots of savagery with timid mien and hesitating steps Last came the mother, a by no means uncomely Senoi lady, left to straggle in as she thought fit. What this family was doing abroad in the jungle at night I do not know. They spent the night in the Kongsi and went their own way next morning.

The Senoi youth in Fig. 2 of Plate IV was one of the men who came with me. I photographed him as an exceptionally pleasant type of savage. Some of my anthropological friends, if they saw him, might say that his pleasantness, and cleanliness showed the contamination of civilization. For myself, the pleasanter and cleaner a savage is, the better I like him.

As a possible health resort Riam is useless, as it consists of one sharp waterless ridge. As a mountain well worth visiting, however, I commend Gunong Riam to all who dwell in Kinta. Two days good walking from Tanjong Rambutan should bring one to the top, and although Malays may talk of the natural difficulties of the journey, no one but a cripple would be stopped by them. The only difficulty is the transport of baggage, and if anyone determines to ascend the mountain, I would advise them to send for Senoi from the Ulu of the Kinta, who would also act as guides. The Malays of the neighbourhood are not very much use, although I must say that one man with me worked well for his wages. Apart from transport troubles I regard the ascent of Riam as the easiest climb I have had in the Peninsula.

COMPARISON OF THE STRUCTURE OF GUNONG TAHAN, GUNONG RIAM AND OTHER PENINSULAR MOUNTAINS.

In conclusion I will deal very briefly with the structure of Gunong Tahan, Gunong Riam, and other mountains in the main range. It is common knowledge that the main range is mostly composed of granite. Granite is a rock that solidified at a considerable depth from the surface. In the case of the main range of the Peninsula the granite rose in a molten state in the crust before solidifying, the rise being rendered possible by the folding of stratified rocks above into an arch, or anticline, of great length. Two at least of these anticlines were formed at the same time, or about the same time, which I have called the Main Range Anticline, and the Benom Anticline. As these arches were formed, much of the rock fell into the molten granite, but when the latter consolidated, stratified rocks remained above. Much later in the earth's history denudation laid bare the granite cores below the remains of these anticlines, carving out the main range and the Benom range. In time denudation will cut down into these granite masses. How far have they cut down already ?

It is obvious that at some period of the process of denudation the highest peaks would show remains of the superincumbent stratified rocks. At such a time a large part of the surface of the granite core would be visible In the case of the main range there is some reason to suppose from the evidence of the distribution of tin-deposits that denudation has not gone far beyond this surface of the core of granite, and it is very interesting to find, as de Morgan noted in the eighties, that the summit of Riam is composed of altered stratified rocks, phyllites and quartzite. On this, the highest peak of the main range, there is then a remnant of the superincumbent stratified rocks, corroborating the other evidence of denudation not having advanced far into the granite mass. I expect too that stratified rocks will be found on Gunong Gyang, on Yang Blar, and other high peaks in the neighbourhood. We may regard these rocks on Riam as a remnant of the "lid of the Peninsula" which, when removed, revealed the vast wealth of tin-ore below.

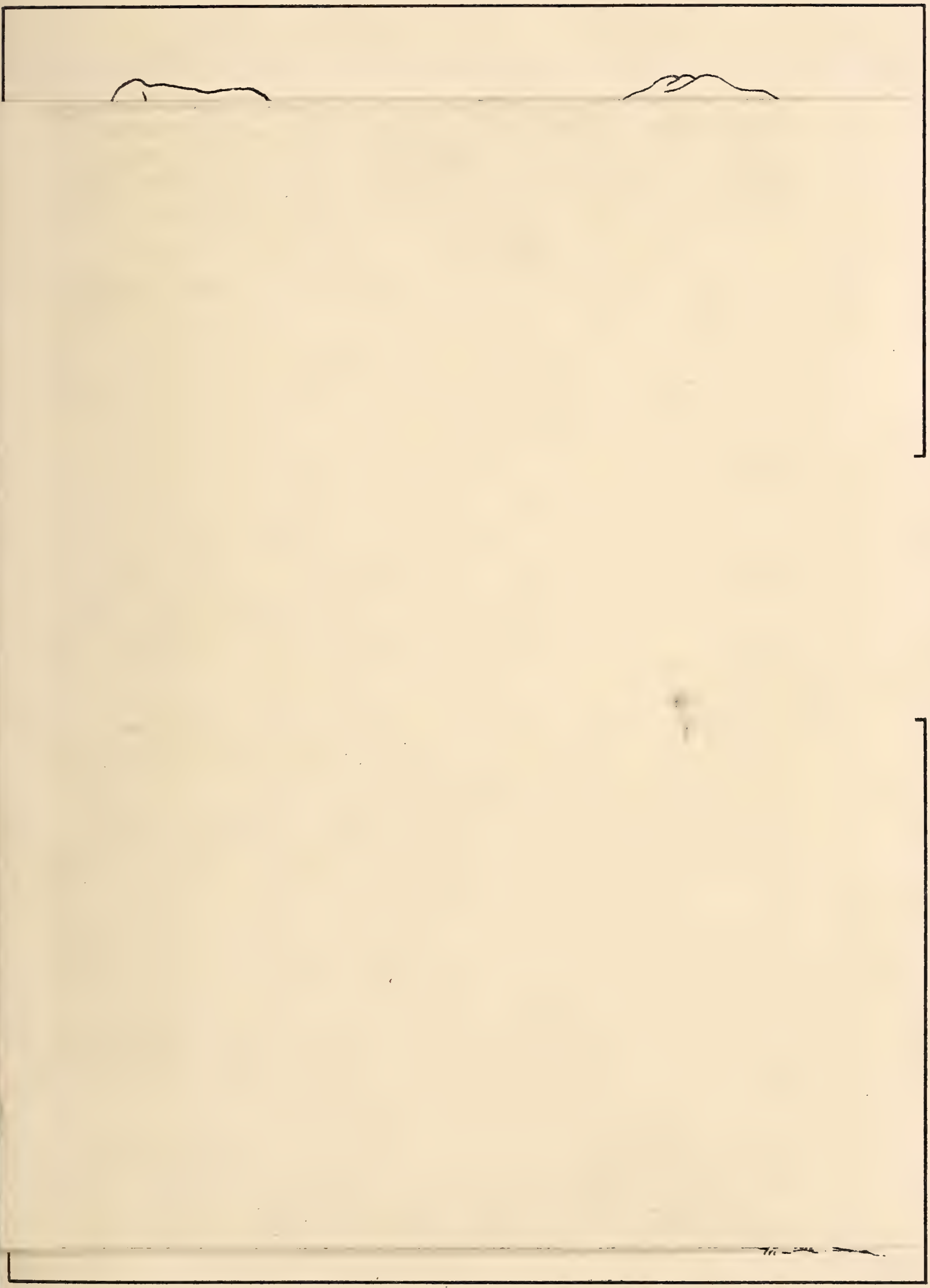
Riam, then preserves for us a portion of this lid. Lower peaks in the main range that I have ascended, Gunong Ulu Kali and Gunong Berembun, have been stripped of these rocks and show granite only, as far as we know.

Gunong Tahan however, and the Tahan range generally, although connected with this folding, fall into a different category. A glance at the map shows that the Benom Anticline lies parallel to the Main Range Anticline. Between the two anticlines the east limb of the latter and the west limb of the former meet, and when they meet we find a range of hills formed of quartzite and conglomerate. These rocks are the younger members of the two arches, and we expect to find them of course on the east side of Benom as part of the east limb of the Benom Anticline. They are there, forming a great belt of hilly country stricking through the centre of Pahang and including the Tahan range, which is on the western border of this belt.

The Tahan range, then, including Gunong Tahan, is part of one of the two great arches.

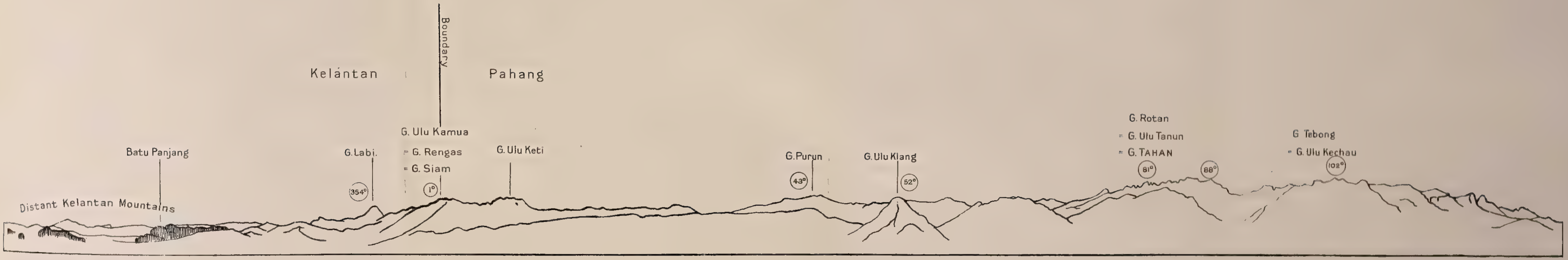
Gunong Riam is capped by a small remnant of the other of the two arches, but is chiefly composed of granite.

Gunong Ulu Kali, Berembun, and the majority of the peaks in the main range, as far as we know, retain no trace of the arch, but consist of the solid granite core only.



2. The Valley of the S. Teku. View on the way to Gunong Tahan.

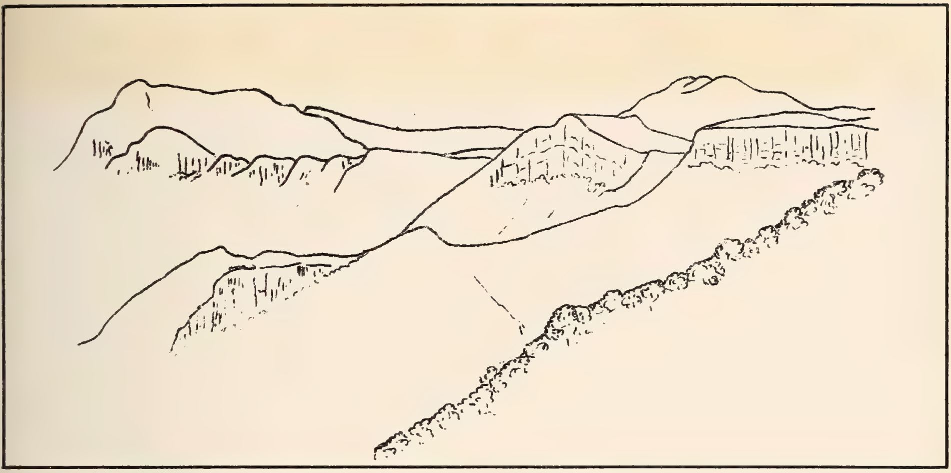
Plate I.


Kelantan
Boundary
Pahang
Batu Panjang
Distant Kelantan Mountains
G. Labi.
354°
G. Ulu Kamua
= G. Rengas
= G. Siam
1°
G. Ulu Keti
G. Purun
43°
G. Ulu Klang
52°
G. Rotan
= G. Ulu Tanun
= G. TAHAN
81°
88°
G Tebong
= G. Ulu Kechau
102°

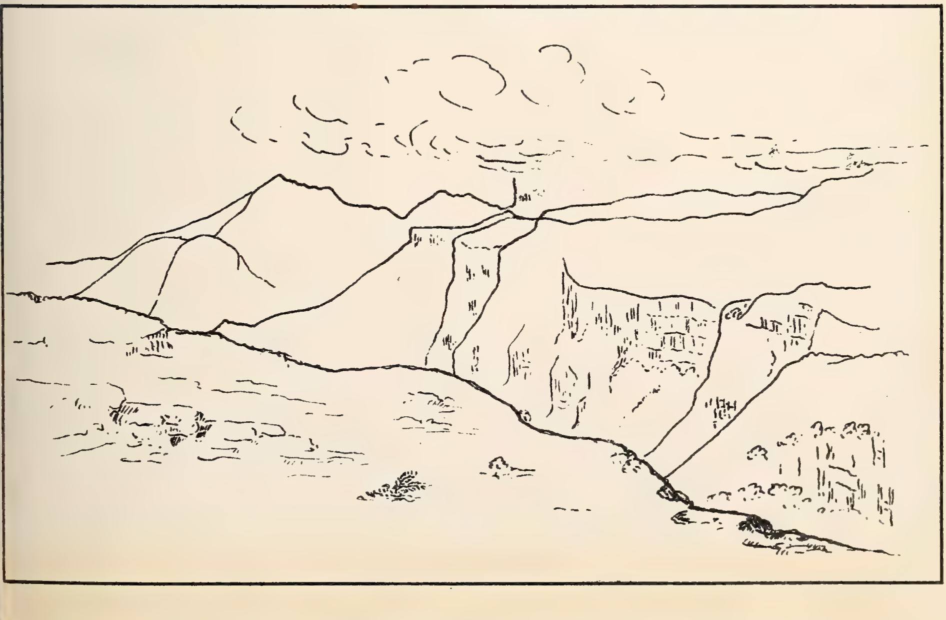
Limestone Hills shaded.

Hill-Sketch of the TAHAN RANGE from the north end of the Cherual Limestone Hills in the Ulu of the S. Tanun. The names are given as taken down at the time of making the sketch from YUSUF BIN SLEIMAN of Kampong Cherual.

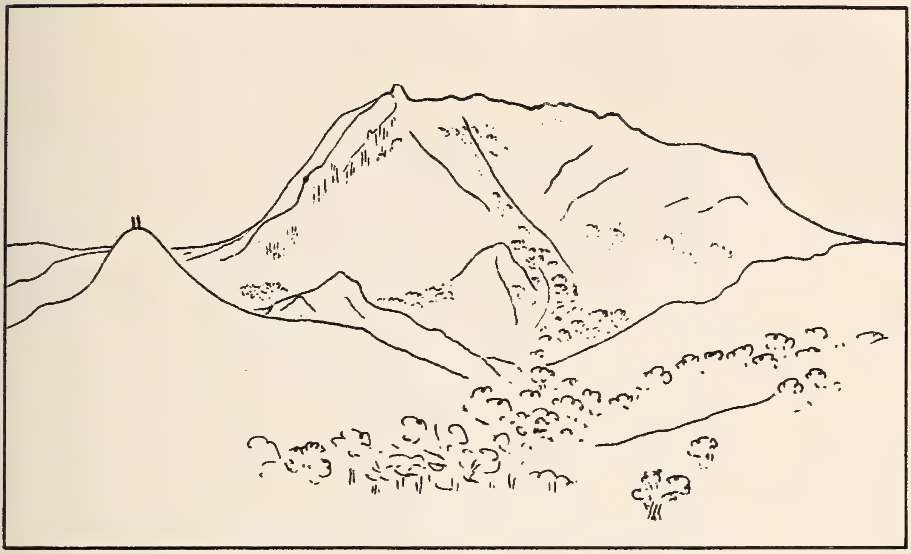
nch



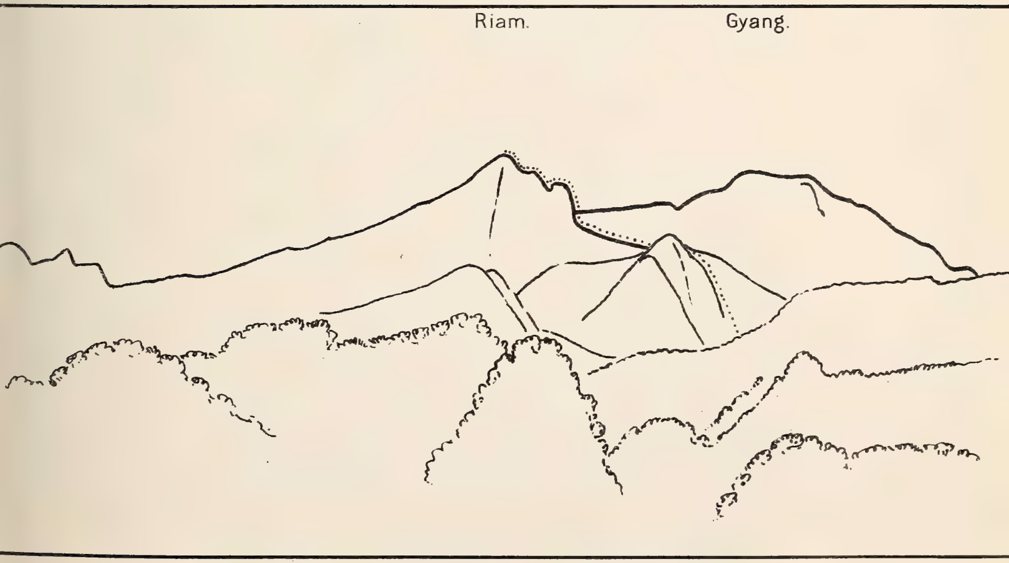
1. Sketch shewing plateau-like top of G. ULU KECHAU and Cliffs of Sandstone. In foreground valley of Teku.



2. The Valley of the S. Teku. View on the way to Gunong Tahan.

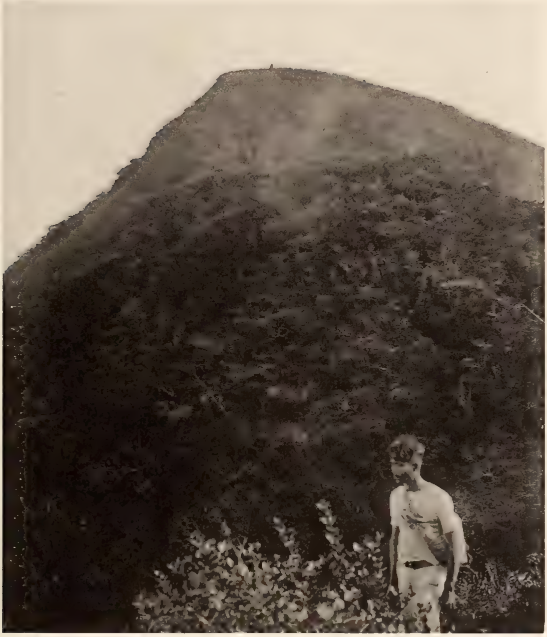


1. G. TAHAN from the elevated plateau-land of the Tahan Range.

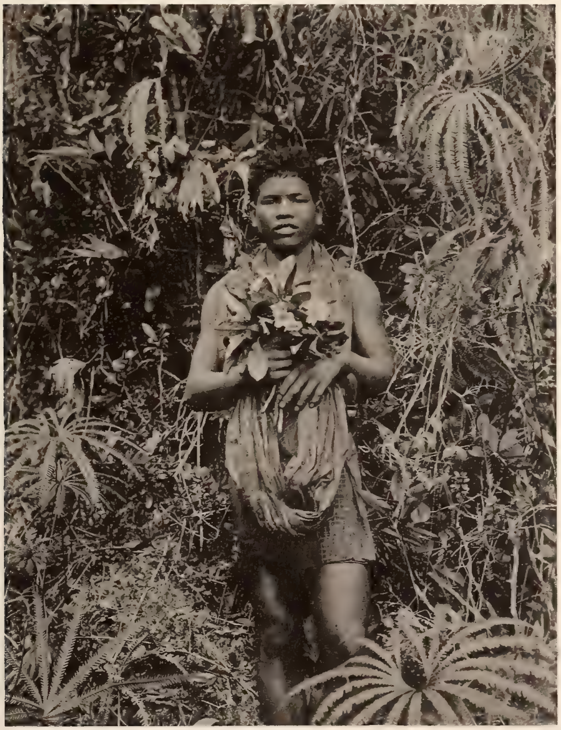


2. G. RIAM & G. GYANG from the Ipoh-Tambun Road.

Part of the route up Riam is shown by dotted lines.



1. The Summit of Gwnong Riam.



2. Senoi youth with rhododendrons on Gwnong Riam.

Bemrose, Collo., Derby.

Explanation of the Plates.

Plate I.	Hill Sketch of the Tahan Range.
Plate II.	Fig. 1. Gunong Ulu Kechau.
	Fig. 2. Valley of S. Teku.
Plate III.	Fig. 1. Gunong Tahan.
	Fig. 2. Gunong Riam and Gunong Gyang.
*Plate IV.	Fig. 1. Summit of Gunong Riam.
	Fig. 2. Senoi Youth.

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*Erratum : for 'Gwnong' read 'Gunong'.

Three Early Kĕris.

BY R. O. WINSTEDT, F.M.S. CIVIL SERVICE

With Plates V. and VI.

The three *kĕris* illustrated in Plate V, different views of two of which may be seen in Plate VI, are probably the earliest authenticated specimens in any English collection. To describe them briefly. The *kĕris* on the left, a curving blade with 13 *lok*, has a hilt showing the features of a European in a helmet and chain gorget, features as caricatured as is the portrait of the Dutchman in the folk-tale of *Anggun che Tunggul*

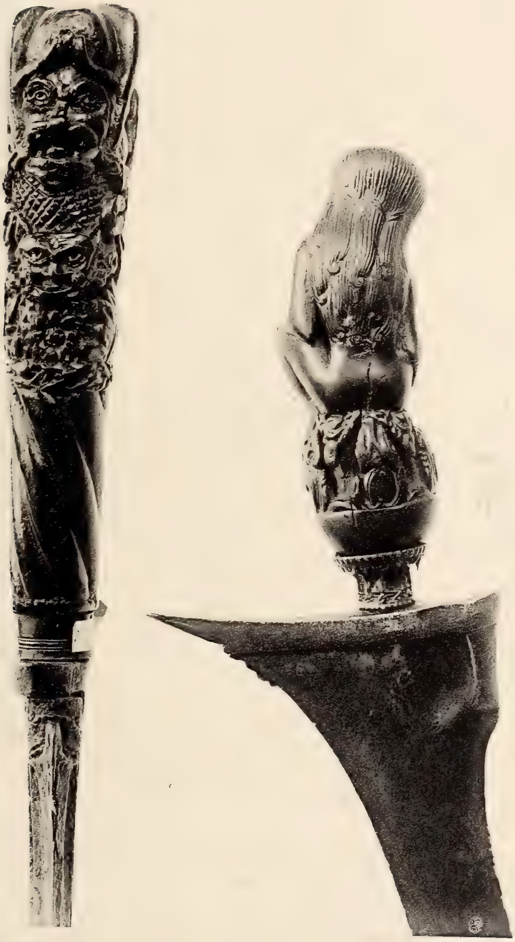
Gĕrham-nya èmpat sa-rumpun ;
Sa-gantang makan daging ;
Dua chupak lĕkat di gigi-nya.

The small *kĕris* in the centre of Plate V and on the left of Plate VI has a hilt carved with the Javanese representation of some demigod from the *wayang kulit* cycle, possibly Arjuna ; probably, any Javanese could identify it, though writing in England I have no means to discover. It is to be noted that the angle of the hilt follows the conventional attitude of the *Jawa dĕmam* or cobra-headed Malay hilt, the evolution of which is and probably will remain unsolved. It may be remarked, that the high forehead of Javanese demi-gods would seem to point to this artistic type deriving from a people among whom binding of the head was a custom.

The third *kĕris*, which is illustrated only in Plate V is interesting for several reasons :—the blade, by the bye, is damasked and has eleven *lok*. The hilt preserves the conventional angle of the *Jawa dĕmam*; the long-nosed figure (the nose unfortunately has been broken off) with its row of teeth has a striking affinity with the still longer nosed figure on Patani *kĕris* hilts, but the back of its head is carved with hair like that of the last *kĕris*. And it is to be noted that the curved conventional ornament round mouth and chin is almost identical with that round mouth and chin of the Javanese demi-god.

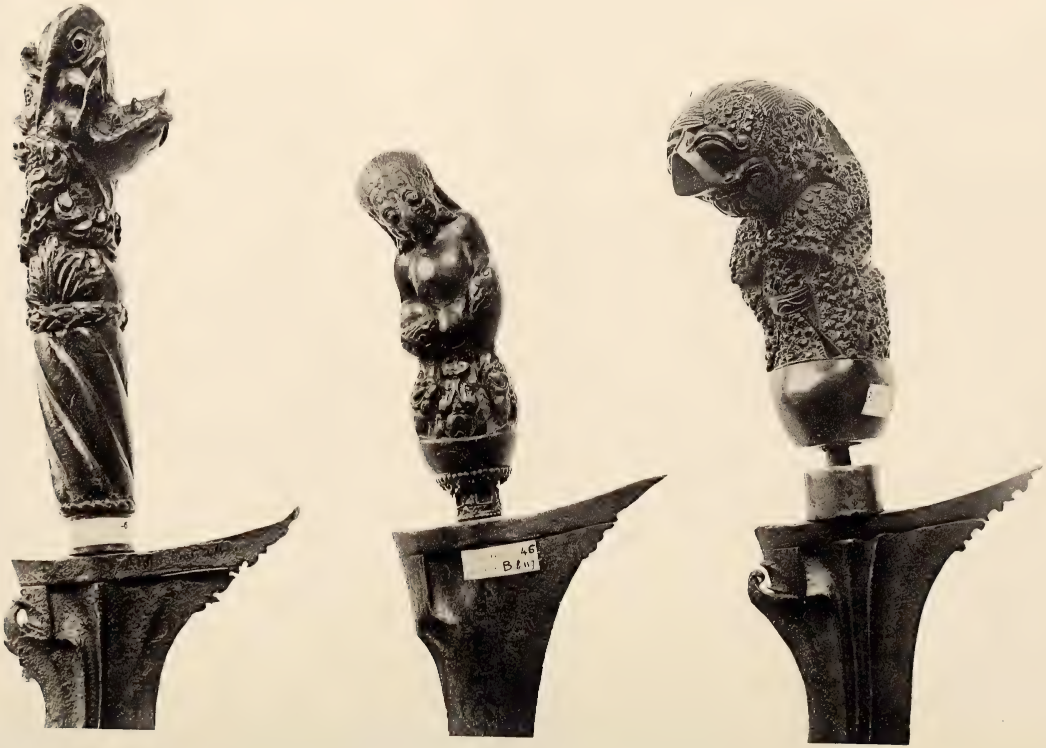
These three *kĕris* are now in the Ashmolean Museum, Oxford, and belong to the old Tradescant Collection, which dates from the beginning of the 17th century.

John Tradescant the elder is said by Anthony à Wood to have been a Dutchman, but was probably English even in his name, of which other variants were Tradeskin and Tredeskin. He and his son of the same name were travellers, naturalists and gardeners and introduced into England the lilac, acacia, occidental plane and possibly the pine-apple. In the service of George Villiers, Duke of Buckingham, the father dealt "with all merchants from all places but especially from Virginia, Bermudas, New-



KĔRIS IN THE ASHMOLEAN MUSEUM, OXFORD.

Bemrose, Collo., Derby.



KĚRIS IN THE ASHMOLEAN MUSEUM, OXFORD.

Bemrose, Collo., Derby

foundland, Guinea, Binney, the Amazon and the East Indies for all manner of rare beasts fowls and birds shells and stones." On Buckingham's death, he seems to have entered the service of the king and queen and probably at that date established his physic garden and museum at the east side of South Lambeth Road, leading from Vauxhall to Stockwell. He was the first in England who "made any considerable collection of the subjects of natural history." He died 1637-1638. The son succeeded the father as gardener to Queen Henrietta Maria, and was also a traveller. In 1656 resolving "to take a catalogue of those rarities and curiosities which my father had sedulously collected" he published his *Museum Tradescantianum.* This book in its 179 pages contains lists of birds, shells, fishes, insects, minerals, fruits, war instruments, habits, utensils, coins and medals. Among entries of other warlike instruments from Japan, Turkey, India, China, Canada, Virginia, Ginny, Persia, and Muscovy occurs the entry on page 46 of "Poisoned creeses or Daggers, two waved two plain"—apparently one of the plain has been lost. In 1659 Tradescant and his wife sealed and delivered a deed of gift of this collection of rarities to Sir Thomas Ashmole, but his will of date 1661 bequeathed the collection to his wife for life and after her decease to "the Universities of Oxford and Cambridge to which of them she shall think fit." There was a law-suit and Ashmole got the collection "to have and enjoy." In 1677 Ashmole offered it to Oxford as soon as a building should be erected to receive it. In 1683 Wren finished a building and the collection went to Oxford in 'barges', and "the name of Tradescant was unjustly sunk in that of Ashmole." Ashmole, of course, was not a traveller, but Windsor herald and author of a book on the order of the Garter.

The old M.S catalogue of the Tradescant collection compiled in 1685 by Edward Lhywd, first Assistant Keeper of the Ashmolean and still preserved in the archives of the museums contains entries of several creeses vaguely described and an attempt at exact description of the little demi-god hilted *kĕris* : "*117 Pugio anceps in mucronem exit, manubrium simiae imaginem exprimit*: *a double-edged, dagger tapering to a point,—its handle exhibiting the figure of an ape.*" The *vagina lignea* or *wooden scabbard* has been lost.

The official catalogue of the Ashmolean Collection of 1836 has the entries

32 *Two Malay creeses or daggers with waved blades. Mus. Tradesc.*
33 *Another with straight blade. Mus. Tradesc.*

So we have the history of these three *kĕris* established practically beyond doubt back to the early years of the XVIth century. I am indebted to Mr. E. T. Leeds, formerly of the F. M. S. Civil Service and now Assistant Keeper of the Ashmolean Museum for callling my attention to these weapons, getting them photographed for me and putting the Catalogues cited at my disposal.

Mount Ophir Legends.

By Dr. Mildred E. Staley.

I. In No. 60 of this Journal there is an interesting account of Malacca by Barretto de Resende.

In connection with the last part of it, regarding Gunong Ledang (Mount Ophir), the following notes may be of interest.

Lately, when visiting Kampongs at the base of the mountain, I obtained the modern, 1912, version of the story.

In a cave which is brilliantly illuminated by scintillating lights, lives the Queen-Goddess or Sorceress, variously described as a "*Bidahari*," '*Perempuan Sakti*" etc. There she is waited upon by "Spirits of the air" (called formerly *Benuas*,) demons, and a tiger who is her familiar, into whom she can at will project herself.

She resents all attempts of Malays to climb the mountain, but English (orang puteh) are exempt from her anger, because it has not struck her they would ever wish to remain on the mountain! Hence also, Malays are suffered to ascend temporarily when acting as guides.

All animals bow down to her, and her tiger has a sense of smell so keen that he can inform her at once when a party commences to ascend. The Sorceress then retires into her cave, which eye of man has never seen, or mayhap she is pleased to enter the tiger. Once long, long ago, the last Sultan but one (? Ala-e-din), wished to make friends with the Sorceress, and sent from Malacca ambassadors, dressed in fresh odoriferous tiger skins, to offer her marriage on his own behalf. Her reply was that she would accept the offer only when the Sultan fulfilled the following requirements.

First, he must build a bridge of solid gold from the top of her mountain to the Malacca Hill, whereby she might be suitably conveyed across.

Secondly, the Sultan must send her 10,000 mosquitos' hearts as a present.

Thirdly he must send a cupful of his own blood.

The Sultan replied that he was rich enough to build the bridge of gold, and that 10.000 mosquitos' hearts were easy to supply, but to give of his heart's blood was quite impossible. So the negociations fell through. Before ascending the mountain, a counter spell supplied by the village Pawang at considerable expense, is a necessity for a Malay who is willing to brave the Hantus, jins, and malevolent demons of the mountain.

An enlightened Mohommedan Malay of the neighbourhood, whose child's life we had saved in a dangerous illness, when pressed to speak openly, confessed his firm belief that the mountain was the resort of demons, saying, "There would not be all these stories without reality behind them."

It will be noted that the many tigers formerly infesting the mountain, are now reduced to one. No doubt when a good road up has been constructed, and Mount Ophir is a favorite Sanitarium for the sick and tired inhabitants of Negri Sembilan and Malacca districts, the Sorceress and all the demons will betake themselves elsewhere.

II. In reference to the "Saletes" (orang-laut), mentioned in the appendix, I have occasionally seen their present day descendants in the art, spearing their fish in deep water just as it was done of old. The javelin, attached by thin twine to the wrist, is thrown with sure and powerful aim by the fisherman, standing not in a boat, but on some miniature pier or "water-machan" of bamboo, built into the sea.

III. In connection with Goddesses, it may be of interest to report that one day in a distant Kampong, I found the Malays busy propitiating the celebrated Hindu Goddess of Smallpox, *Sitla.*

I was familiar with her chief shrine, to be found near Gurgaon, Punjab, which is yearly visited by crowds of pilgrims from all over Northern and Central India.

In this case, the familiar ceremonies were being performed by a Hindu fakir (holy man) in orange garments, bearing on his forehead the three-fold upright marks of Civa the Destroyer, assisted by two followers chanting appropriate mantras to a small mud image of the "Slaying One." With simple faith, the people paid heavily for this attempt to avert the epidemic.

One was reminded of the saying (Rg Veda) "They speak of Mitra, Varuna, Agni;—that which Is and is One, the poets call in various ways."

Mosquito Larvæ and Freshwater Fish.

BY DR. R. HANITSCH.

The following pages contain a Report which I prepared, at the request of Government, upon the possible usefulness of the small fish *Haplochilus panchax*, the 'Ikan mata lalat' of the Malays, in keeping down Mosquito larvæ and consequently Malaria, as the fish 'Millions' of Barbados is said to do.

The island of Barbados enjoys a remarkable immunity from fever, and two or three years ago, when the reason of this was put down to the presence in enormous numbers, on the island, of a certain fish which feeds on small crustaceans and insects, including mosquito larvæ, the Colonial Office decided to try the experiment of distributing that fish among the various tropical Colonies, to ascertain if it might be of any service in checking Malaria in other places as well. This fish, the 'Millions' (*Girardinus pœciloides*, de Filippi *), so called on account of the enormous numbers in which it occurs in Barbados, is only a small species, according to Günther, about 1½ inches in length, and belongs to the family Cyprinodontidæ.

The Zoological Society of London, together with the Agricultural Department of Barbados, declared itself willing to help in the experiment and in the distribution of the Fish, though there was some scepticism as to whether the experiment would be a success.† However, as a closely allied fish, *Haplochilus panchax*, the 'Ikan mata lalat' of the Malays, occurs in the Malay region, it was thought that before introducing here the 'Millions' of Barbados, it should be ascertained whether the *Haplochilus panchax* might not be as effective in checking Mosquito larvæ, and I was accordingly asked to investigate the matter.

RAFFLES MUSEUM AND LIBRARY
SINGAPORE.
15th May, 1912.

To the Hon'ble The Colonial Secretary, S.S.

Sir,

In accordance with your minute of 21-3-1912 (H. C. $\frac{2042}{1912}$) I have the honour to submit herewith a Report on the distribution and habits of the fish *Haplochilus panchax*, H. B.

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* Günther (Brit. Mus Catal. Fishes, Vol. VI, p. 356) and D. S. Jordan and B. N. Evermann (The Fishes of North and Middle America, Vol. I, p. 689) refer to it under the name *Lebistes pœciloides*.

† See letter of Captain J. A. M. Vipan in Proceedings, Zoological Society, 1910, pp. 146-147.

As the object of the enquiry is to ascertain whether the fish might be of the same use as the fish "Millions" (*Girardinus pœciloides*) of Barbados in keeping down mosquito larvæ and consequently malaria, it would have served no purpose if I had restricted my enquiry to that one species of fish, and I have therefore attempted to collect species of all freshwater fish in the neighbourhood of the town of Singapore, and have made experiments as to whether they feed on mosquito larvæ or not.

Obviously only the smallest species of freshwater fish were found in the small ditches, and of these *Haplochilus panchax*, the "Ikan mata lalat" of the Malays, seemed to be the most common. Like the "Millions" of Barbados, it belongs to the family Cyprinodontidæ, which, according to Günther, includes the smallest fish known. It grows to only about 2″ in length, but notwithstanding its small size it is probably the best known of the local freshwater fish, not so much on account of its numbers, as from the very conspicuous bright silvery spot on the top of its head. It is of slow moving habits, and generally keeps close to the surface of the water. We found it in the following places:—junction of River Valley Road and Leonie Hill Road; Tanglin Road; Botanic Gardens; off Orange Grove Road; Kim Kiat Road; Syed Ali Road; Gaylang Road; Teluk Blangah Road, but it could be found in almost any ditch capable of holding fish. It eats mosquito larvæ, but not greedily.

Another small species, also common, though less so than the previous one, is the *Hemirhamphus fluviatilis*, Bleeker (Ikan jolong jolong). It is an ally of the Gar-Pike and the Flying fish, and it is easily recognised by its lower jaw being drawn out into a long beak. It grows to about 2½″ in length, and was found in the following places:—junction of River Valley Road and Leonie Hill Road; Orange Grove Road; Tanglin Road; Jervois Road; Kim Kiat Road; Teluk Blangah Road. It is a delicate fish, not always surviving the journey to the Museum. It is herbivorous, living on Algae and Waterweeds, and does not eat mosquito larvæ.*

A great favourite amongst sporting natives is the Fighting Fish (*Betta pugnax*, Cantor), or "Ikan pelaga". It grows to about 3½″. It has a large ventral fin, drawn out to a point posteriorily, and its colour is a dull purple, which, however, changes into dazzling metallic colours when the fish is excited. It is very active, and ate mosquito larvæ greedily within a few seconds of their being given to it. We found it in Somerset Road; Jervois Road; Moulmein Road; and in large numbers, especially, in the pond at the junction of Syed Ali Road and Thompson Road, which is being filled up at present.

A larger fish than any of these above is the "Ikan sepat" (*Osphromenus trichopterus*, Pall.), belonging to the same family as the Fighting Fish, viz. the Labyrinthici. It is edible, but is much less valued than Gurami (*Osphromenus olfax*) which for the table is regarded as the best of the local freshwater fishes. The Ikan sepat grows to about 4", and is distinghished by its beautiful irridescent colours and its ventral fin being transformed into a long thread-like ray, often reaching beyond the tail. It has two round black spots on either side, which are very marked in the young. We caught it in Orchard Road (in the ditch in front of the Police Station), in Jervois Road, Somerset Road, Syed Ali Road, and noticed it also in the swamps near Teluk Blangah Road. The young ate mosquito larvæ, though not ravenously, whilst full grown specimens seemed to despise them.

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*I have since repeated the experiment with the same result, and this fish seems to be the only one of those I examined which does not eat mosquito larvæ.

To the same family belongs the "Ikan betok" or Climbing Perch (*Anabas scandens*, Dald.) The largest specimens we found measured about 4½", though, according to Cantor, it grows up to 7". This fish can live a long time out of water, and it is well ascertained that it can travel on land, pushing itself along by its fins. We caught it off Gaylang Road, and noticed it in the swamps at Teluk Blangah. The young ones ate mosquito larvæ greedily. No experiments were made with full grown specimens.

The 'Ikan aruan' (*Ophiocephalus striatus*, Bl.), belonging to the family of Ophiocephalidæ, is also able to live out of water and to travel over damp grass. It is much eaten, and grows, according to Duncker, to about 2½ feet in length. The young ones, of which we caught some at Syed Ali Road, are of a golden orange colour, and ate mosquito larvæ greedily. We saw the same fish at Teluk Blangah.

The Catfish, or "Ikan keli" (*Clarias magur*, H. B.), occurs in many places in Singapore Island, such as the Botanic Gardens, Syed Ali Road, Teluk Blangah Road, but no experiments were made with it.*

The above enumerated fishes seem to be the more common ones in the neighbourhood of Singapore town. Whilst collecting them we were constantly on the look out for mosquito larvæ (Malay name "jentek-jentek"), and it must be stated that, perhaps with one exception, no mosquito larvæ were found in any great numbers in places in which there were fish or which were easily accessible to fish.

For instance I had expected to find many mosquito larvæ in the swampy district between Killiney Road, Devonshire Road, and

---

*I may add a few words, as I have since been able to get additional material, from Lavender Street. The Catfish, thus called from the eight long barbules which arise from around its mouth and have some resemblance to a cat's whiskers, lives in muddy water and is a very active and shy fish. It grows, according to Cantor, to at least 1½ feet in length, but experiments were naturally made only with small specimens, one to two inches in length, such as would be likely to feed on mosquito larvæ. The first experiments were quite negative in result, and only after the fish had been kept on short rations for a couple of days, did it begin to eat mosquito larvæ. Its usual diet seems to be decaying animal and vegetable matter.

Somerset Road, but discovered them (those of *Culex*) only in a single pool, and that contained no fish. I then examined the compound of a European house in Killiney Road, which is unoccupied at present, and found the place littered with old tins full of the larvæ of the Tiger Mosquito (*Stegomyia fasciata*).

An examination of certain pools off Gaylang Road showed striking results, from which, however, it might be rash to generalize. The pools were at the edge of the mangrove zone, they were numerous, and had been formed to a great extent as depressions between the mounds of the Cray-fish *Thalassina anomala*, which is so common in such localities. One of the pools was thick and black with mosquito larvæ (*Culex*), but contained no fish ; another pool, only about a yard off, was free from larvæ, but contained fish (Ikan mata lalat).

We also examined the most malarial region in Singapore, the swamps of Teluk Blangah, and found mosquito larvæ in the following situations : in empty tins lying about ; in freshly formed pools at the top of the reclamation ; in a small pool, at a level with the main pool, which contained only a single specimen of a fish (Ikan mata lalat) ; and, finally, we found numbers of the larvæ of *Anopheles* in the dense masses of waterweed in the largest pool there, the weed being so thick that probably no fish could penetrate it. Besides, the weed was so full of other minute animal life, that, even if a fish had penetrated there, he could scarcely have been expected to devote himself entirely to the mosquito larvæ. The open and clean stretches of water in the pool contained several species of fish (Ikan mata lalat, Ikan jolong-jolong, Ikan betok, Ikan sepat, Ikan aruan and Ikan keli), but we did not notice any mosquito larvæ there.

The pond at the junction of Syed Ali Road and Thomson Road, which is being filled up at present, certainly contained mosquito larvæ (*Culex*) in places which seemed quite accessible to the numerous fish in it, but the general microscopic life there was so abundant that there was no need for any fish to restrict its diet to mosquito larvæ especially.

Whether the fish " Millions ", if imported into such a locality, would show a marked predilection for mosquito larvæ, is doubtful. It is also uncertain whether it would be able to hold its own against the several species of fish indigenous to Singapore Island. In Barbados it is only the freshwater fish known (see Captain Vipan's letter in Proc. Zoological Society, February 1910, pp. 146-147), and it may not be equal to the competition with any other fish. However, as the Agricultural Department of Barbados has arranged to send from time to time consignments of " Millions " to the Zoological Gardens, London, from there to be distributed through the Colonial Office to various tropical Colonies, the experiment of bringing some to Singapore should be easy and inexpensive, best perhaps on a troopship in charge of the ship's surgeon. But it must be remembered that to introduce an animal into another part of the world always brings the risk of the accidental introduction of some other and undesirable organism. In the meantime it seems advisable to fill up all large pools in the neighbourhood of the town, or, if this is not feasible, to clean them of all surplus vegetation, and to introduce into them small species of fish such as are known to feed on mosquito larvae, like the "Ikan mata lalat" and especially the "Ikan pelaga".

However, there must be in a town like Singapore many localities in which *Anopheles* and other mosquitos breed, and which are quite inaccessible to fish, and by far the greater area of the town would probably not be touched at all by preventive measures, such as the introduction of fish. If, as I know from my own experience, *Anopheles*, besides *Culex* and *Stegomyia*, may practically any day be found in a comparatively healthy part such as Fort Canning Road, then an attempt to exterminate malaria by means of fish in the crowded central districts of the town would be utterly hopeless. But the experiment might be of use in the outskirts of the town.

I have the honour to be,

Sir,

Your obedient servant

R. HANITSCH,
Director.

Population of the Straits Settlements and Malay Peninsula during the last Century

By H. Marriott.

I have collected in the annexed tables statistics of the population according to race and sex for the Colony, and according to sex for the Malay States.

So far as the Colony is concerned the figures are probably accurate from 1871 onwards. Before that date the censuses were taken by the police at somewhat irregular intervals and are not very reliable.

Between 1822 and 1836 the figures have been derived from Mr. Newbold's "British Settlements in the Straits of Malacca." From 1836 to 1860 I have been unable to get many figures, and from that date they are taken from the Census Reports. With regard to the Federated Malay States, no reliable data are to be procured previous to 1891, and for the other Protected States the Census Returns for 1911 are the first of any practical importance.

It may however be of interest to add here the following estimate of the population of the States of the Peninsula in the years 1835-1836 given by Mr. Newbold in the work quoted above.

Perak	35,000
Selangor	12,000
Rembau	9,000
Sungei Ujong	3,600
Johol	3,080
Jempol	2,000
Jelebu	2,000
Sri Menanti	8,000
Pahang	40,000
Johore	25,000
Kedah & Ligor	50,000
Kelantan	50,000
Trengganu	30,000
Kemamam	1,000
Patani	10,000
Aborigines	9,000

Straits Settlements.

RACE.	1856	1860	1871			1881			1891		
	Persons.	Persons.	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.
Chinese ...			104,615	87,327	17,288	174,327	143,605	30,722	222,969	179,235	43,734
Eurasians ...			5,772	2,763	3,009	6,904	3,335	3,569	6,991	3,353	3,638
Europeans ...			2,429	1,848	581	3,483	2,803	680	4,422	3,169	1,253
Indians ...			33,390	25,526	7,864	41,268	31,264	10,004	52,637	39,547	13,090
Malays ...			159,453	81,356	78,097	194,042	98,677	95,365	210,387	106,497	103,890
Others ...			2,438	1,613	825	3,360	2,003	1,357	3,653	1,899	1,754
Total ...	248,000	274,222	308,097	200,433	107,664	423,384	281,687	141,697	501,059	333,700	167,359
Floating ...	*	*	*			*			11,846	11,140	706

* Included with the general population.

Straits Settlements (continued.)

Race.	1901			1911		
	Persons.	Males.	Females.	Persons.	Males.	Females.
Chinese ...	274,207	211,513	62,694	369,843	272,210	97,633
Eurasians ...	7,623	3,654	3,969	8,072	3,838	4,234
Europeans ...	4,484	2,819	1,665	7,368	5,179	2,189
Indians ...	56,645	41,680	14,965	82,055	62,330	19,725
Malays ...	214,538	107,059	107,479	240,206	120,692	119,514
Others ..	5,755	3,113	2,642	6,525	3,125	3,400
Total ...	563,252	369,838	193,414	714,069	467,374	246,695
Floating ...	12,549	12,440	109	8,006	7,674	332

Settlement of Singapore.

RACE.	1824	1825	1826	1827	1828	1829	1830			1832		
	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Males.	Females.	Persons.	Males.	Females.
Chinese ...	3,317	3,828	4,279	6,088	6,210	7,575	6,555	6,021	534	7,762	7,149	613
Eurasians ...	...	...	...	...	...	...	29	21	8	94	67	27
Europeans ...	74	84	111	87	108	122	92	73	19	105	83	22
Indians ...	830	1,048	1,195	1,209	1,582	2,167	2,258	1,973	285	2,365	2,058	307
Malays ...	6,431	6,872	7,285	6,299	6,943	7,744	7,640	4,072	3,568	9,286	4,874	4,412
Others ...	31	19	37	42	42	56	60	53	7	103	93	10
Total ...	10,683	11,851	12,907	13,725	14,885	17,664	16,634	12,213	4,421	19,715	14,324	5,391

Settlement of Singapore (continued.)

Race.	1833			1834			1836			1840	1849	1860
	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Persons.	Persons.
Chinese ...	8,517	7,650	867	10,767	9,914	823	13,749	12,870	879			50,043
Eurasians ...	96	56	40	113	55	58	117	65	52			2,445
Europeans ...	119	91	28	138	100	38	141	105	36			
Indians ...	2,624	2,318	306	2,648	2,284	364	3,357	2,899	458			12,971
Malays ...	9,452	4,918	4534	12,485	6,919	5,566	12,497	6.734	5,763			15,202
Others ...	170	148	22	178	130	48	123	82	41			131
Total ...	20,978	15,181	5,797	26,329	19,432	6,897	29,984	22,755	7,229	39,681 *	59,043 *	80,792 *

Settlement of Singapore (continued.)

RACE.	1871			1881			1891			1901		
	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.
Chinese ...	54,572	47,104	7,468	86,766	72,571	14,195	118,418	96,959	21,459	156,964	123,311	33,653
Eurasians ..	2,164	1,063	1,101	3,094	1,509	1,585	3,557	1,732	1,825	4,080	1,974	2,106
Europeans ...	1,946	1,528	418	2,769	2,207	562	3,500	2,594	906	3,387	2,177	1,210
Indians ..	11,501	9,533	1,968	12,138	9,674	2,464	15,618	12,536	3,082	17,251	13,773	3,478
Malays ...	26,141	14,610	11,531	33,012	18,542	14,470	35,417	20,122	15,295	35,982	19,829	16,153
Others ...	787	510	277	1,429	920	509	1,743	923	820	2,680	1,282	1,398
Total ...	97,111	74,348	22,763	139,208	105,423	33,785	178,253	134,866	43,387	220,344	162,346	57,998
Floating ...	*			*			6,864	6,753	111	10,501	10,462	39

* Included with the general population.

Settlement of Singapore (continued.)

RACE.	1911		
	Persons.	Males.	Females.
Chinese ...	222,655	164,172	58,483
Eurasians ..	4,712	2,273	2,439
Europeans ...	5,803	4,166	1,637
Indians ...	27,990	23,244	4,746
Malays ..	46,952	25,133	21,819
Others ...	3,873	1,902	1,971
Total ...	311,985	220,890	91,095
Floating ...	5,864	5,661	203

Settlement of Penang.

RACE.	1822	1826	1828	1831	1833	1835	1860	1871		
	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Males.	Females.
Chinese ...					11,150			36,561	30,347	6,214
Eurasians ...					789			1,383	644	739
Europeans ...								433	289	144
Indians ...					12,995			18,611	14,047	4,564
Malays ...					59,045			75,216	38,170	37,046
Others ...					1,396			1,026	652	374
Total ...	51,207	55,116	60,551	77,160	85,375	86,009	124,772	133,230	84,149	49,081
Floating ...	*	*	*	*	900	*	*	*		

* Included with the general population.

Settlement of Penang (continued.)

RACE.	1881			1891			1901			1911		
	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.
Chinese ...	67,820	55,313	12,507	86,637	68,287	18,350	98,019	73,376	24,643	111,738	78,674	33,064
Eurasians ...	1,597	751	846	1,692	814	878	1,948	929	1,019	1,774	826	948
Europeans ...	674	565	109	809	509	300	1,043	606	437	1,262	792	470
Indians ...	27,239	20,442	6,797	35,382	25,817	9,565	38,122	26,986	11,136	46,565	33,074	13,491
Malays ...	91,970	46,417	45,553	104,940	52,673	52,267	105,693	52,715	52,978	114,441	57,227	57,214
Others ...	1,297	717	580	1,764	901	863	2,983	1,781	1,202	2,223	1,008	1,215
Total ...	190,597	124,205	66,392	231,224	149,001	82,223	247,808	156,393	91,415	278,003	171,601	106,402
Floating ...	*			4,394†	3,883	511	1,609	1,557	52	1,271	1,220	51

* Included with the general population.

† Including Military Police and Wayfarers.

Settlement of Malacca.

Race.	1826	1827	1829	1833	1834	1835	1836	1860	1871		
	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Persons.	Males.	Females.
Chinese ...	4,125	5,200	4,797	4,764	4,143	4,613	4,102	10,039	13,482	9,876	3,606
Eurasians ...	2,236*	2,690*	2,078*	1,921*	1,799*	2,227*	2,389*	2,848	2,225	1,056	1,169
Europeans ...									50	31	19
Indians ...	2,337	2,470	2,830	2,797	2,403	2,960	3,241	1,637	3,278	1,946	1,332
Malays ...	16,121	21,081	20,122	18,816	20,825	21,927	21,789	53,724	58,096	28,576	29,520
Others ...	...	...	72	160	90	181	304	410	625	451	174
Total ...	24,819	31,441†	29,899	28,458	29,260	31,908	31,825	68,658	77,756	41,936	35,820
District of Naning ...	3,686	...	4,593	4,671	5,079	5,329	5,881				
Grand Total	28,505	31,441	34,492	33,129	34,339	37,237	37,706				

* Includes all Christians. † Probably includes population of Naning

Settlement of Malacca (continued.)

RACE.	1881			1891			1901			1911		
	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.
Chinese ...	19,741	15,721	4,020	17,914	13,989	3,925	19,224	14,826	4,398	35,450	29,364	6,086
Eurasians ...	2,213	1,075	1,138	1,742	807	935	1,595	751	844	1,586	739	847
Europeans ...	40	31	9	113	66	47	54	36	18	303	221	82
Indians ...	1,891	1,148	743	1,637	1,194	443	1,272	921	351	7,500	6,012	1,488
Malays ...	69,060	33,718	35,342	70,030	33,702	36,328	72,863	34,515	38,348	78,813	38,332	40,481
Others ...	634	366	268	146	75	71	92	50	42	429	215	214
Total ...	93,579	52,059	41,520	91,582	49,833	41,749	95,100	51,099	44,001	124,081	74,883	49,198
Floating ...	*			588	504	84	439	421	18	871	793	78

* Included with the general population.

Malay States.

STATES.	1879			1891			1901			1911		
	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females.
Perak ...	81,084	50,658	30,426	214,254	156,408	57,846	329,665	239,556	90,109	494,057	344,238	149,819
Selangor	97,106* 46,568†			81,592	67,051	14,541	168,789	136,823	31,966	294,035	220,939	73,096
N. Sembilan				41,617	23,327	18,290	96,028	64,565	31,463	130,199	87,651	42,548
Pahang ...				57,462			84,113	46,746	35,970	118,708	72,234	46,474
Johore ...										180,412	122,129	58,283
Kedah ...										245,986	137,139	108,847
Kelantan ...										286,751	144,319	142,432
Perlis ...										32,746	16,808	15,938
Trengganu ...										154,073	76,153	77,920

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* Census of 1887.

† Census of 1884.

[No. 63]

JOURNAL
of the
Straits Branch
of the
Royal Asiatic Society

December, 1912.

SINGAPORE:
Printed at The Methodist Publishing House.
1912.

An Expedition to Mt. Batu Lawi, an hitherto unexplored mountain in northern Sarawak, by J. C. Moulton, F.L.S., Curator of the Sarawak Museum.

With Appendices on some of the collections made by H. N. Ridley, C.M.G., F.R.S., E. B. Copeland, J. J. Smith, Dr. A. Griffini, F. F. Laidlaw, M.D,, F.Z.S., and J. C. Moulton.

With map, plate and four text figures.

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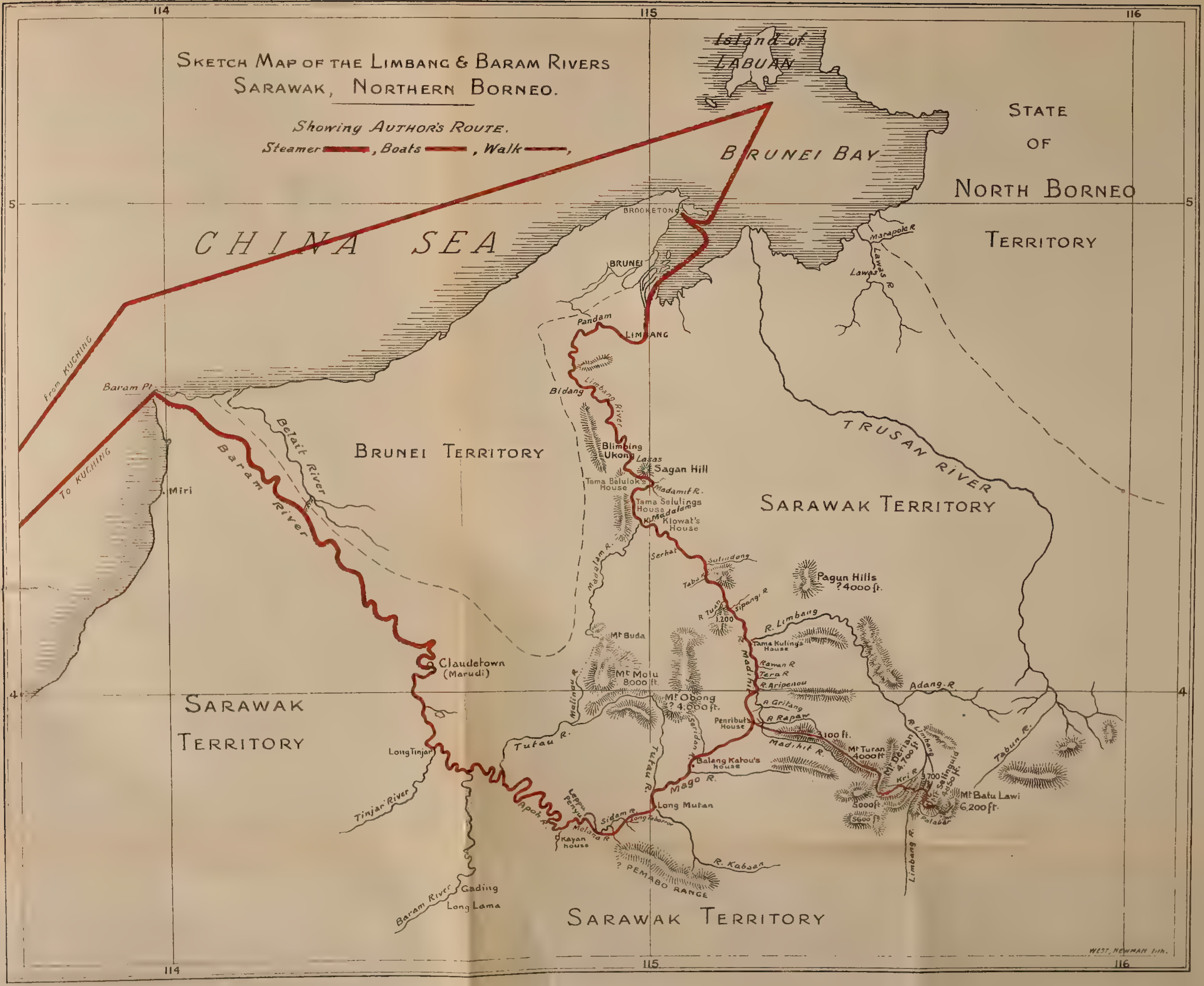Sketch Map of the Limbang & Baram Rivers
Sarawak, Northern Borneo.
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Island of LABUAN
BRUNEI BAY
STATE OF NORTH BORNEO TERRITORY
CHINA SEA
BROOKETON
BRUNEI
Pandam
LIMBANG
From KUCHING
To KUCHING
Baram Pt.
Miri
Belait River
Baram River
BRUNEI TERRITORY
Bidang
Limbang River
Blimbing
Ukong
Lasas
Sagan Hill
Tama Baluloks House
Madamit R.
Tama Selulings House
K. Madalam
Klowat's House
Serhat
Sulimdong
Madalam R.
Tabu R.
R. Tuan
Sipangi R.
1,200
Pagun Hills ? 4000 ft.
Marapok R.
Lawas
Lawas R.
TRUSAN RIVER
SARAWAK TERRITORY
R. Limbang
Tama Kulings House
Mt. Buda
Madihit
Raman R.
Tera R.
R. Aripenou
Mt. Molu 8000 ft.
Mt. Obong ? 4,000 ft.
R. Grifang
R. Rapaw
Penribut's House
Claudetown (Marudi)
Malinau R.
SARAWAK TERRITORY
Tutau R.
Long Tinjar
Tinjar River
Seridan R.
Tutau R.
1100 ft.
Madihit R.
Mt. Turan 4000 ft.
Mt. Derian 4,700 ft.
Limbang R.
Adang R.
Tabun R.
Balang Katou's house
Mago R.
Kri R.
3,700
Selinguid R.
Mt. Batu Lawi 6,200 ft.
5000 ft.
5600 ft.
Palabar
Apoh R.
Leppo Penyu
Sidam R.
Long Mutan
Long Tabarn
Melana R.
Kayan house
? PEMABO RANGE
R. Kabaan
Limbang R.
Gading
Long Lama
Baram River
SARAWAK TERRITORY
West, Newman lith.

An Expedition to Mount Batu Lawi.

BY J. C. MOULTON, F.L.S., ETC., CURATOR OF THE SARAWAK MUSEUM.

PREFATORY.

Far, far away up the Limbang River, more than a month's journey from the mouth, there exists a wonderful unknown country, consisting (so rumour has it) of one vast plain high above the sea-level and surrounded by great towering mountains whose white-faced cliffs may be seen from many distant points. This enchanted land is inhabited by a great and powerful race, who own allegiance to none but their own appointed chief—the dread Rajah of the Interior and Ruler of many thousands of fierce warriors; rumour details further how these people have a wonderful system of irrigation by which they always live in plenty since they gain a second crop of paddy during the year; how by means of natural salt-springs they obtain salt—their chief necessity of life, and so become entirely self-supporting and have no need of intercourse with the outside world; how further they make their own gun-powder, and how they keep large herds of a curious kind of goat. To this country, situated right in the centre of northern Borneo—the source of all the great rivers of Sarawak, viz., the Trusan, the Limbang, the Baram and the Rejang, whence rise also two great rivers of Dutch Borneo, viz., the Batang Kayan and the Koti—to this country, but few from the Limbang district ever penetrate, and, *absit omen,* whence fewer still return.

Thus the gist of the various native yarns to be gathered from those living on and about the lower waters of the great Limbang River, a branch of which runs through the ancient city of Brunei, at one time, as we all know, the flourishing capital of Borneo.

Many of their tales centred on one particular mountain, Batu Lawi by name, which was said to stand up smooth and straight like the post of a house, towering to an enormous height, without a vestige of vegetation on it, and with its glistening white cliffs rising sheer, thereby presenting an unclimbable surface to any fool-hardy explorer. "But surely," I protested "there must be some small ridges or inequalities which would afford one a foot-hold or hand-grip so that one could at least get up a little way?" "Oh no," they said, "and unless the Tuan can walk up the wall of a house like a fly, he won't be able to get up Batu Lawi!" Added to which there were of course numerous stories relating to the power of this wonderful mountain, how few people were ever allowed to get there, how those that did either met some dreadful fate there or else died shortly after their return, while others went so far as to assert that even to point at the mountain with one's hand would incur its just worth, which the mountain would show at once by causing heavy rain to fall.

Such stories, I suppose, so far from acting as a deterrent to the majority of white men, would rather stimulate their curiosity, so that should occasion offer, they would endeavour to learn more of these curious rumours, of the extent of truth in them, of the possibility of verifying them. Well, the present writer does not claim to be an exception to the average and the result of hearing these vague rumours was a careful hunt through available literature for any more definite information on the subject, before taking a journey there himself. What little there was forthcoming is soon told.

HISTORICAL.

In 1858 Sir Spenser St. John at that time British Consul at Brunei undertook a memorable journey up the Limbang River, of which he gives a graphic account in his fascinating book, "Life in the Forests of the Far East." Of this journey Posewitz, [1] who made an exhaustive study of the journeys accomplished by travellers in Borneo, writes that Sir Spenser St. John "was the first European to follow the course of the River Limbang, and its tributary, the river Madihit[2], deep into the interior of the island —namely, as far as the border mountains of Brunei." St. John left Brunei on August 25, 1858, and after fifteen days' boat journey reached the entrance of the Madihit River. Following this river up for some way he struck eastwards across country and then leaving Batu Lawi some 2 days' journey to the south-east he turned north again to the Adang villages, the main object of his expedition. After spending some time exploring this district he returned, partly down the Limbang River, which in this part is extremely dangerous on account of the rapids, and after many thrilling experiences and severe privations, he eventually reached the Madihit again on Oct. 16th, having made a 5 weeks' circular tour of that region. He reached Brunei again after an absence of 56 days. As frequent references to this account are made in the following pages for comparison with my own experiences, I need not give further details of his expedition here, beyond mentioning that he left a careful map—the only reliable one of this region—which I found most useful and accurate, besides being a continual source of wonder to my native followers, who could never understand how that curious piece of paper could give me the wonderful knowledge of the lay of the land which I appeared to possess!

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[1] *Borneo: its Geology and Mineral Resources*, by Dr. Theodore Posewitz, translated from the German by Frederick H. Hatch. 1892. p. 58.

[2] Should be the River Madihit.

After Sir Spenser St. John's visit there appear to have been no further lengthy excursions by Europeans up the Limbang River until the occupation of that district by the Sarawak Government. This took place in 1890 and in the *Sarawak Gazette* for November 1895 (p. 207), there is a brief account of Mr. O. F. Ricketts'[1] first visit to the Kuala Madihit and Adang country. He left Limbang station on August 24th, and arrived at Kuala Adang on September 4th, the last three days of the journey having been accomplished on foot. After staying for three days at a native house some little distance up the Adang River, he returned again down the Limbang River, arrived at the Government station on September 10th, after an absence of just three weeks. He remarks on the peaceable nature of the Adangs, but gives little further information about them or their district.

Mr. W. F. de V. Skrine, Assistant Resident at Limbang, made an exactly similar trip to this village in March 1911, being away 25 days.

The Limbang Reports which appear regularly in the *Sarawak Gazette* mention no other visits to the Adang country; mention however is made of Mr. Ward, then Assistant Resident at Limbang, visiting the natives in the Madihit River in 1907. He was away just 3 weeks. Thus it will be seen that during the last 20 years only three Europeans have succeeded in reaching the Kuala Madihit, which is itself the real starting place for the more arduous journeys into the interior. It should be noted however that on several occasions would-be visitors to this region have had to turn back on account of the river suddenly rising and becoming impassable for weeks at a time. It is only during certain months of the year that this up-river journey can be made, and even then, unless one has limitless time and patience it can only be accomplished with the assistance of a good deal of luck; if the down-coming torrent of water is too swift, the boats cannot get up against it; and as sometimes happens, if the river is too dry the task of dragging the boats up the rapids becomes stupendous and the traveller's progress painfully slow.

Two other routes to this elevated region present themselves to the Sarawak traveller; one up the Trusan River, which flows out into Brunei Bay a few miles east of the Limbang River; the headwaters of this river run very near the Adang stream (an upper branch of the Limbang River), but with this river too the same difficulties are present, although I am informed by natives that one has a better chance of getting up it in the right season than up the Limbang River. The other route is up the Baram and Tutau rivers, which would lead one up to the western side of the plain.

Two long trips have been made up the Trusan River, the first in 1889 by M. O. F. Ricketts accompanied by Dr. G. D. Haviland (afterwards Curator of the Sarawak Museum). An extract from their official diary is given in the *Sarawak Gazette* (1889. p. 78) from which we learn that the expedition started from Trusan Fort on March 25th, 1888, reached the Bah country in ten days and returned again by April 17th, after an absence of 24 days. The elevation of the valley (of the Bah Country) is given as "3,500 ft. and the whole of it is highly cultivated and systematically irrigated;" and again, "At the head of the Bah valley is the range of hills from which springs the Trusan, which at their foot is but a small trickling stream about two feet wide. This was the farthest point reached."

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[1] Resident of Trusan 1885-1890, of Limbang 1890-1909.

No mention is made of Batu Lawi, which, if seen, would surely have occasioned remark.

A second expedition was made up the Trusan to this part as far as the Kelalan stream in 1910 by Mr. J. Stansfield,* who was prospecting for the Government. He was away 28 days and told me he saw no signs of Batu Lawi.

The third route,—via the Baram and Tutau—is the easiest, as far as the river journey is concerned; and the longest and most extensive journey, after that of St. John, has been accomplished from this side by Mr. R. S. Douglas, who reached the Bah plain, south of the Limbang and Trusan head-waters in 1908. He left Claudetown (the Government station on the Baram River) on October 25th and did not return till December 19th. He describes his journey briefly in the *Sarawak Gazette* (1909, p. 29) and at greater length in the *Sarawak Museum Journal* (1912, Vol. I, No. 2, pp. 17-29). From these it appears that he spent some time on the southern portion of the plain, but did not penetrate to its eastern or northern boundaries. The details of his sketch-map and of mine, which accompanies this paper, are necessarily imperfect, and there are certain differences which we are unable to reconcile at present; however, it is proposed to undertake a joint expedition in the near future to this region, when we hope these points will be cleared up satisfactorily.

In order to complete our historical account I have quoted below all the passages I can find in which mention is made of Batu Lawi.*

**Vide Sarawak Gazette*, 1910, p 68,

*Sir Spenser St. John. *Life in the Forests of the Far East*, 2nd Ed. 1863, Vol. II, p. 25. "One of the greatest curiosities, the natives say, is the formation of two mountains, which rise from a plain in lofty peaks of the shape of needles; they have never been to them, but have seen them from a distance; they are the pillars of the gate of some enchanted palace, and I heard it whispered to one of my men that all were not privileged to see even these pillars, as it requires some incantation; so that there is a chance of the needle mountains vanishing into thin air". (Almost certainly a reference to the double peak of Batu Lawi). J.C.M.

Ibid. p. 87. "An hour's walk brought us to the Upper Limbang, whose bed is here, perhaps, seventy yards wide, very shallow, not reaching to the hip. It flows from the Silingid mountains, and is said, after skirting their western face, to turn to the south-east to its sources in Lawi". (The Limbang River passes Batu Lawi and is said to rise in Mt. Murud). J.C.M.

Ibid. p. 109 "and I may yet get a look at Lawi. I have constantly borne in mind the whisper I overheard, that only certain privileged individuals are allowed to get a sight of this famous hill."

Ibid. pp, 117, 118. " About 11 p.m. started in a south-west direction for about a mile and a half, to the top of a hill, from whence there is usually a view of Lawi, in a south-west direction ; all the mountains, however, are hidden in clouds, but it must be a high one if remarkable among its towering neighbours. The whole appearance of the country is mountainous, each range becoming more lofty as we approach the hidden interior. From the elevation of about 4, 348 feet. the two mountains next us looked very high, perhaps between 7, 000 and 8, 000 feet : they say these are the children, Lawi the father."

Were the people not so busy with their farms, and I so pressed for time, I would try and reach Lawi, as there are people residing at its foot ; but I must put it off till next expedition, when I hope to pass the mountain."

Ibid. p. 121. Again Lawi was so covered with clouds that nothing but its base could be seen ; it appeared about fifteen miles off in a S. W. direction. I hear that the Limbang rises in that mountain. There are villages at its base, two of which were lately attacked by the Kayans and destroyed.

A. R. Wallace. *Australasia*, 4th Ed. 1884, p. 348. "Further north however, to the south-east of Brunei, are many mountains believed to be from 7000 to 8000 feet, and one, Lawi, said to be muchh igher, and to form the culminating point of this district ".

Ibid. p. 349. "The latter river (the Limbang) was explored by Mr St. John in 1858 nearly to its sources in mountains between 5000 and 6000 feet high. and about 10 miles north of the lofty Lawi mountain, which he was unable to reach ".

R. S. Douglas. *Sarawak Gazette.* 1909. p. 29. "We next proceeded up the Kaban river as far as the Merang river and after camping here for the night, we pushed on until we reached the foot of the Pamabo Range, which we climbed and crossed at Pong Pawan some 5,000 feet high. The view from the summit was quite indescribale in its beauty. On the west side we overlooked the Tutau river as far away as Mount Mulu, and away northwards, across the Limbang River to Batu Lawi. On the east side the view was finer still, as it overlooked the whole of that much talked of central plain, which comprises the Bah and Mein country, and is bounded by the ranges of Pamabo, Murud and Apo Rawat on three sides and Baram river on the South-East".

W. R. T. Clement. *Sarawak Museum Journal*, 1911, Vol. I, pp. 134, 135. A Murut legend describing the " spiritual origin of Batu Lawi. After sundry vicissitides including a difference of opinion with another mountain, the story ends thus : —"And *Batu Bunga*, now a broken tumbled mass, resides in the Palutut country, while *Batu Lawi* is still to be seen and admired near the sources of the Limbang River.

"There, for ever untrodden by the foot of man,

" A lasting monument of ages to stand,"

A. B. W. in *Sarawak Gazette*, 1911, p. 70. Quoting one words of an old Kalabit warrior, "At the end of ten days we reached the foot of theBatu Laweh, a rock, Tuan, that stands alone and reaches to the sky. One day's march it takes to round its base and no man has ever dared to scale its sheer white face.

" There we made a halt. Two of our men were ill of the fever ; they died, and we buried them at the foot of the rock in the sandy flat where *the badak* (rhinoceros) love to play. Here also we took the oath again for hearts were growing faint ".

J. C. Moulton. *Sarawak Gazette*, 1911, pp. 148-151. A preliminary account and condensed report on this expedition.

Narrative.

May 2nd, 1911. Embarking in Kuching, the capital of Sarawak, on the S. S. "Gladys," one of the company's coasting-steamers, and somehow getting Dayak collectors, boy and stacks of baggage on board just in time, we left the wharf punctually at 7 a.m. and, steaming down river, reached the sea a little before 10 a.m. Inquired anxiously of the Dayaks as to the nature of last night's all-important dreams and was relieved to hear that they were all right, no bad ones. A Dayak always pays great attention to any dream that he has on the night before starting on any expedition, regarding such as a guarantee for the success or failure of his mission. When on their own, if the dreams are bad nothing will induce them to start, but when following the un-believing European they allow their fore-bodings to take second place, and when disaster comes, content themselves with a reproving "I told you so." In March 1910 I set out from Kuching with the intention of doing this same expedition, but bad dreams pursued our party for the first three days and the expedition ended of course in dismal failure and illness.

May 3rd. The sea pleasantly calm all yesterday and we anchor off Kedurong point at 10.30 this morning to drop mails and a few passengers; arrive midnight at Miri, where the Anglo-Saxon Oil company have just opened a new oil-field.

May 5th. Reach Brooketon early in the morning and after a few hours there steam across Brunei Bay and into the mouth of the Limbang River, which, considering the length of the river, is remarkably narrow, and, like practically all Sarawak rivers, has a difficult bar which can only be negotiated by steamers of shallow draught and even then at not less than half-tide. However, we are over the bar and for good or bad we are started on our long river journey which is to take us a hard month's travelling through strange countries and among strange peoples before reaching the upper waters of this river and even then to fall far short of its actual sources, unknown to white men and but vaguely determined by the natives sparsely scattered along its banks. We arrive at the Government station of Limbang (or Pangkalan Těrap, as it is known by the natives) at midday and disembark, the preliminary stage of the journey done. Heavy rain all night, registering 3.92 inches next morning. This looks bad for a start, as, if anything like that amount fell up-river, it will mean a heavy fresh and make progress against it very slow or perhaps impossible for a day or two.

May 6th. Mr. Ermen, the Acting Resident of the station, kindly makes the necessary arrangements for boats, coolies, food, etc., and informs me that he has called twelve Sea-Dayaks from the Pandaruan River to assist me in the up-river journey. These and their friends came up to the bungalow in the evening and try to persuade us to let them all go. They refuse to believe in the peaceful nature of my mission and being firmly convinced that it is really an expedition undertaken against the tribes on the border, against whom they have (or pretend they have) old scores to pay off, they are immensely keen to accompany me. However as I know the Muruts further up-river and have arranged with them to take me through the more difficult part of the journey, we stick to our original twelve. The bazaar is full of these Dayaks who have come down to meet the Rajah and ask his permission to go on the war-path against these people in the interior, a request which was of course refused when the Rajah arrived on his annual visit a day or two afterwards.

May 7th. Leave Limbang on the Government steamer "Alice Lorraine" at 9 a.m. having got rid of superfluous Dayaks who had boarded the steamer in the hopes of being allowed to come at the last moment. Two were allowed to come in place of two others who asked to be let off, one on account of bad dreams and the other for domestic reasons. The steamer towing our up-river boats soon passed the first corner and cut short our last view of Europeans and civilization. Winding through low-lying country, first past untidy but picturesque Brunei-Malay houses scattered along the banks half-hidden among large banana plantations, and among them Kadayan houses intermingled, then further up river the Malays give place to the neat Bisaya houses with buffalo herds grazing near by, presenting such a peaceful scene that it is difficult to imagine all this country in the throes of continual strife under Brunei oppression only 20 years ago. Crocodiles abound in this river and I had a shot or two from the steamer at them, but without visible effect. This is the common species *C. porosus;* the Gavial (*Tomistoma schlegeli*)—common enough in the Sadong River, Sarawak—does not I believe occur there though it has been recorded in the neighbouring rivers of Trusan and Lawas. We arrive at Bidang at 1 p.m. and take all the baggage up to an empty house on the bank, where we arrange to pass the night. The steamer has to return as there are rocks in the river just above this and she cannot venture further. Went out with a gun in the evening and secured a pigeon (punei) and a love-bird (tiong); on returning in the boat we were startled by the firing of a small cannon twice quite near us; this came from a Bisaya house and we learned that an old lady of high rank had died that day. The head of the house asked me up and I found a few men sitting and beating gongs round the corpse,—already swathed in burial clothes. There were no apparent signs of grief among the inmates of the house and I gathered that the deceased was very old, or, as the natives put it, "her years were enough" (*omor chukup*). The heavy rain of two days ago could only have been local as the river is not high.

May 8th. Left Bidang at 6.45 this morning in the boats manned by Bisayas. They seem to be very distinct from other tribes of this region and, according to some I asked, are closely related to the Tutongs of the Brunei—Baram district. Certain authors have stated that they come from the Philippines, but I could get no information on this point from the few older men I met. The late Dr. A. B. Meyer wrote to me that he had been able to notice a similarity between the vocabularies of the Bornean tribes Bisayas and Tagals with those of the Philippine tribes, Visayas and Tagalogs. The Bisayas are regarded with a good deal of awe by the up-river natives, and sinister stories are told of mysterious deaths of visitors to their houses, and of their great riches acquired by questionable means. They used to live in long houses like other natives of Sarawak, but now that their country is peaceful they are beginning to live separately, two or three families together, although there are still some long houses to be seen. Their houses are much better built than those of the Muruts, and a Bisaya remarked that the Muruts were "like birds" (*saperti burong*) because their houses would only last a year and then they had to move on and build another.

After 4 hours paddling we arrive at Empasong and enter the large Bisaya house there. Found a Malay in it detained by a bad leg. He had been with a Mr. Walker* as collector on the Kinabatangan in North Borneo and I should have been glad to take him along as we were in need of another experienced collector, however, his injured leg almost prevented him from walking at all, so we went on again without him, and arrived at Ukong a little before 3 p.m. Here we found some Chinese shops on the left bank of the river and in one of them we made ourselves comfortable for the night. No Chinese traders are allowed any further up than this point and consequently the little settlement here does a thriving trade with the neighbouring Bisayas and Tabuns.

We are warned against throwing stones into the river, as that is certain to bring rain, which is equally certain to cause a dreaded "fresh" in the river. A Dayak complains to me of bad dreams and wishes to turn back, but I persuade him to try another three nights; if these bad dreams persist, then he may report to me again. From Ukong we get a good view of Mt. Buda, which is the name given to the northern spur of Mt. Molu, and the source of the Madalam river. Owing to a leaky boat some of the rice got wet and we had to leave three men behind to dry it for a day, while we went on next morning to arrange for further coolies.

Several rumours were current here about the ravages said to have been committed by a party of Dayaks two months before among the Adangs up-river, and opinions were divided as to how the aggrieved Adangs were likely to receive us. Some suggested sending up messengers to explain the peaceful nature of our mission, but the uncertain state of the river was the only argument that weighed with me and I determined to get to the Kuala Madihit without any unnecessary delay; once there we should know more about the truth of these rumours and could act accordingly.

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*Author of "Wanderings among South Sea Savages," 1909.

While on the subject of hostile natives it may be as well to explain here the attitude which the different tribes up-river were expected to adopt towards us, and of course this subject had to be carefully considered throughout the journey. After the lower reaches of the Limbang has been passed, the population diminishes and houses become less frequent until one reaches the mouth of the Madalam River, where there are a few Murut houses, followed by a blank stretch of rapids, which occupied us 4 days in passing; at the end of this stretch the river branches sharply off to the East and becomes impassable for boats; this part is occupied by Kalabits who had recently lost their chief and were now under the leadership of his son, quite a young man. According to rumour these people were not likely to be over friendly, as they had suffered recently at the hands of Dayaks, but beyond a cool welcome nothing was feared from them. From their place (Kuala Madihit) two routes to Batu Lawi were available, one due East to the aggrieved Adangs and thence south to Batu Lawi, the other to follow the Madihit to its sources and thence due East to the mountain. The disadvantages of the latter route was the difficulty of getting coolies in this sparsely populated district, but eventually this outweighed the serious objection offered by the other route, namely, the unfriendly reception expected from the Adangs. East of Batu Lawi lived the Pa Bawans who had but recently submitted to the Government but had not yet paid tax; south of them, and south-east of Batu Lawi, the country was occupied by the powerful Pa Brian tribe who were avowedly hostile to the Government and to any tribes living under the Sarawak flag.[1] This was the substance of the information to be obtained from the natives on the way up the river, and as the journey advanced we found that the account was accurate in the main.

May 9th: (Temp. 6 a.m. 74.5°). Leaving Ukong at 7 a.m., five hours' paddling brings us to the mouth of a little stream called the Seradan and we pull up on a high sand-bank just opposite. Above this is a small Tabun house occupied by Tama Belulok, the chief of the Tabuns of this district and one of the most influential natives on the upper part of the river. His son (Belulok) had been with me before and this time I intended taking both father and son to see me through the journey. According to them the Tabuns come of a Treng stock and they used to occupy the country at the head waters of the Tutau and Madihit but a series of disastrous wars and diseases of various kinds sadly reduced their numbers, so that but very few representatives of this once powerful race now remain. The Tabuns occupy about three houses on the Limbang River and perhaps numbered in all some 100 souls; they are nearly related to the Muruts and Kalabits and speak both these languages easily, though the Tabun dialect itself is distinct. Closely related to the Tabuns, and in fact from the same Treng stock, are the Long Patas who live in a long house on the Tutau River under Oyau Blawing (or Tama Saging, the father of Saging, as he is now known).[1] These two branches now form the sole survivors in Sarawak territory of the once populous Trengs.

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[1] Evidence of the warlike nature of these Pa Brian people is shown in the report for August 1911 by the Resident in charge of Trusan. He writes (*Sarawak Gazette* 1911, p. 198):— "The Bah Muruts reported that the Muruts of Pa Brian came down on them while they were at work in their clearings and shot at them, killing three men. This occurred in June and was only reported on my arrival in the Trusan. Later on, on the 24th, a number of Bah Muruts, including the chiefs Dawat Sigar, Gaieng Abai and Sakai Libat, with a large following came to Trusan and reported that two more of their number had been shot by Pa Brian people in the same way and their heads taken. They could make no resistance as they were outnumbered by two to one. The Bahs say they have done nothing to justify such attacks and that the Pa Brians are a terror to the Upper Trusan."

This must have been going on within a short distance of Batu Lawi, possibly only a few days after we left the mountain.

Soon after we landed below the Beluloks' house, a long boat swept round the corner and drew up beside ours, and we were soon busy shaking hands with some old friends from up-river whom we met last year. These were some 20 Tabuns and Dayaks from the Kuala Madalam on their way down river to pay their respects to the Rajah at Limbang. However I had to explain to them that His Highness had arrived at Limbang and left again already, so they turned back, while we stayed to make arrangements for coolies. In the afternoon three of us paddled a little way up the Seradan to look for a Dayak who, we were told, was working gutta there; I had arranged with him last year to accompany me in my next expedition. We eventually found his "lancho" or hut by the side of the stream, a few fowls outside and some lumps of rubber, and the barking of dogs told us he was not far off. Eventually we began to realize that there was some meaning to the continued barking and we were startled at hearing some animal rush through the jungle quite close; we tore off after it in the direction of the sound of cracking branches and then lost the "scent," but another Dayak joined us almost immediately and said he had just caught sight of a pig swimming the river with the dogs in close pursuit; but they eventually lost it, although later in the evening our Dayak friend and his trusty dogs succeeded in bagging a "rusa" (deer). The scenery up the little Seradan stream was typical, to my mind, of the best kind to be seen in Sarawak. Where a view over any large extent of country only consists of one unbroken panorama of uniform dull coloured jungle, one has to fall back upon small patches of country for the most pleasing scenic effects, and these are *par excellence* to be found up such jungle-shaded streams as this; dense unfathomable jungle, suggesting an infinity of forest, wall one in on each side, huge trees towering above with branches thrown across and interlacing foliage; through this filters the strong tropical sun, lighting up a glistening patch here and there in the winding stream beneath. Along this stream, as we enter, an occasional crocodile (three I counted) splashes clumsily into the water from off the muddy bank where he has been lying in wait for a chance meal; a little further on a "biawak" (Monitor lizard) walks stealthily up the bank hoping to escape notice. The stream becomes too small for our boat and we get out and walk over the rough stony bed; just at the bend ahead of us a pheasant (an Argus by the length of its tail) flutters across the stream and disappears up the opposite bank; I am too occupied with slippery boulders to get my gun up in time. Overhead we caught a glimpse of two or three "tajak" (Solid-casqued Hornbill, *Rhinoplax vigil*), usually out of range and jeering at us with their curious mocking cries. The lovely velvety black and green *brookeanus* (♂) butterfly dances by at a good pace and soon after we see another beautiful green Papilio, known locally as the "Sarawak Beauty" (*Papilio arjuna carnatus*); a frail black-spotted *Hestia* floats lazily by out of reach of the net, and then ensues an exciting chase after the rich green dragonfly *Neurobasis chinensis,* which, in Sarawak, is only found in the upper reaches of rivers. On returning to Belulok's house we find the same species of tiger-beetle (*Cicindela funerea*) swarming on the sand-bank at the water's edge, which I found in the same place last year; curiously enough I never could find it on any other similar locality above or below this spot on the Limbang River, nor indeed anywhere else in Sarawak. Last year another Cicindela (*C. crespignyi*) was found abundantly on the same spot, and in many places most of the way up the river, but on this occasion it was entirely absent on that sand-bank and only sparsely taken at different places further up.

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[1] For an interesting account of the custom of changing names among these tribes see "A comparative Vocabulary of the Kayan, Kenyah & Kalabit languages" by R.S.Douglas in the *Sarawak Museum Journal* No. I, 1911, p. 79.

Heavy rain for the rest of that day, but apparently only local as it did not prevent us continuing next morning.

May 10th: (Temp. at 9 a.m. 82°). Having arranged with Tama Belulok to collect in some of his men and to follow with Gesang, the Dayak, next day or if possible that afternoon, we leave his house in the morning and soon come to our first rapids, in this case "wood-rapids," *i.e.* rapids formed by a mass of timber stuck in the bed of the river and sufficient to partially choke the stream. Going is rather slow against the strong stream, and it takes us till 2 p.m. to arrive at the kuala Madalam. Our friends of yesterday meet us here and we are taken up into Tama Seluling's house to spend the night. Tama Seluling himself is a very short ugly little Tabun, who seemed to spend most of his time nursing his little son or else out with a "jala" (casting net) after fish. The first time I went there (last year), he insisted on giving up his bed for my use, and I did'nt like to refuse to use it, although the nights spent thereon were not all pleasure! The river divides here, one branch really the main Limbang River, goes off to the South-East, the other is called the Madalam River and rises in Mount Molu. On my arrival here last year, the Limbang was in heavy flood and as it seemed hopeless trying to paddle up against it for some days, I took the opportunity of an excursion up the Madalam to its source. It took us the best part of 4 days to get there* and just 12 hours for the return journey. The route has been traversed often enough by Europeans and natives, as it is one of the recognised routes between the Limbang and Baram districts. Sir Spenser St. John gave a good account of it 50 years ago, describing how the Madalam disappears under a great rock (the Batu Tarikan) and how the Kayans had dug a ditch round this rock to get their boats through to join the stream where it emerges again the other side; this ditch is still used to-day, though not by armies of head-hunting Kayans so much as by parties of gutta-hunting natives of various tribes. We found a small party of seven Dayaks encamped there, on their way to the coast after six months' gutta-hunting. They said they had about 4 pikuls (*gutta rian*) for which they expected to get $120 per pikul from the Chinese at the Baram bazaar, the latest price in Kuching being about $300; this last I told them, but they seemed to look upon it as a recognized thing for the Chinaman to gather in somewhat more than a moderate profit, and indeed they seemed well satisfied with their prospecitve gain of some $70 each. They had been delayed there some 3 or 4 days doing nothing because their "angei" or omens, had been bad; they had heard the cry of an evil bird each morning and that had prevented them walking some 3 hours to the next stream where their boats awaited them. However they got over the difficulty while I was there by getting up before daylight and slipping off by torchlight before that wretched bird of ill-omen had time to wake up and utter his warning cry.

A little way above the Batu Tarikan, (the rock mentioned before) the stream enters a high limestone cliff and disappears altogether into the bowels of Mt. Molu; a wide archway, but very low, only 4 ft. above the water's edge at the highest point, lets one into a spacious hall; four of us paddled in, leaving one man outside with a cut stick and a whistle, so that he could let us know if the water was rising. According to the natives the water has a way of rising very suddenly for no apparent cause, and for that reason most natives are afraid of going in there; however one must not believe them too implicitly, as in Sarawak, at any rate, they are usually most accommodating to the European traveller; if they see he wants to do something never done by white men before, they are quite ready to tell you the story of one who never dared to do this before, and at the same time keep quiet about the hundred and one who have done it. Once inside this kind of hall or ante-room a small dark door-way barely five foot square shows us the only way into mysteries of the interior; through this we push our boat, shoving against the slimy walls of the cavern with our hands. This soon widens and the roof stretches high up over our heads; we follow a winding passage to the left for perhaps a quarter of a mile and then ground on a sand-bank and have to wander on foot round fantastic limestone rocks under huge stalactites hanging from lofty chambers, then squeeze through another passage and out again into another huge chamber, having lost the source of the stream under one of the walls. We find one of these passages leads out on to the upper surface of the cliff, thus affording an escape if the water did happen to rise and cut off our egress below. A few edible nests of the Swift (*Collocalia lowi*) were found, but little else besides the usual legion of bats. In all we spent an interesting hour and a quarter under the mountain,—"where no white men and but few natives had ever ventured before!"

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*Sir Spenser St. John did the trip twice, taking 8 days on the first occasion from Brunei and 5 days on the second from the Kuala Madalam.

I have digressed on to my trip of last year, but as the present expedition is merely a second attempt at the objective of the first, I must make that my excuse for mentioning one or two incidents of the first attempt.

May 11th: (Temp. 7 a.m. 73°). Just at the kuala Madalam there is a Tabun graveyard in the jungle by the side of the river. I landed one morning to inspect it and found the decapitated trunks of three large trees, about fifteen feet high. A space had been cut out of the top so as to hold a large jar in which the bones of the dead were deposited. One of these jars was blue and white, the other two the usual brown earthenware, but according to the Dayaks with me, none were of much value. At the foot of one of these pillars was an ordinary wooden coffin supported on two forked posts some four or five feet from the ground. This contained the remains of a Tabun who had died some six months ago and near it was another coffin of which the lid had rotted away exposing some decomposing remains. On the hill above were some Dayak graves characterised by the neatly carved "sarcophagus" of wood marking the spot.

From Tama Seluling's house we could see three peaks to the south of us, which were pointed out as Mt. Molu to the west, Mt. Buda (the source of the Madalam) in the centre, double peaked, and Mt. Obong to the east.

Tama Belulok and some Tabuns turned up this afternoon but unaccompanied by Gesang who had excused himself (and his three companions) on account of a bad dream. Our Dayaks left behind at Ukong to dry the rice have also joined us, and other men are hard at work preparing a boat to replace a leaky one we had brought from Limbang, so we have every hope of getting on tomorrow morning. I shall be glad to do so as the kuala Madalam has unpleasant memories for me, of a tedious wait of 4 days for the river to go down, of a mosquito-bitten hour in a tree waiting for some deer to come and be shot, of the subsequent chase after a wounded one in pitch dark swamp and jungle "assisted" by the light of a few matches, and not least, of a delicious breakfast off the roe of some freshly killed fish, followed by the most painful seizure of vomitting, such as I never wish to experience again.

Tama Belulok apologizes for Gesang's non-appearance and remarks somewhat scornfully that he does'nt believe in dreams and then immediately after announces cheerily that the omens were excellent this morning, and there is no doubt that we shall get to Batu Lawi all right. I went after pigeon in the evening in some secondary growth not far from the house, but could only bag two small "kukor" (doves, *Spilopelia tigrina,* Temm.). In the evening get some amusement out of a few parlour-tricks and trials of strength; one "event" consisted of laying a pole end on against the dividing wall of a house, then standing 2 feet away from the end, they pick the end up, place it on the shoulder and try to drag it away from the wall. They did it generally after a little struggle and tried from a distance of three feet but that proved too difficult. I initiated them into the mysteries of "Indian wrestling" which (as far as I know it) consisted in the two combatants lying down along-side one another, the head of one by the feet of the other, then with arms locked, each has to raise the leg nearest his adversary and with a skilful lock and adjustment of his weight, try to overthrow the other. They took to it kindly and a succession of contests helped to pass a pleasant evening, enlivened with a little gin, beating of gongs and Dayak dancing.

May 12th: (Temp. 8 a.m. 77°). The river still all right, our crews out early this morning getting the baggage stored in the boats. After some delay we start, 15 in one boat and 13 in the other; two birds "engkrasak" (Spider-hunters, *Archnothera,* sp.) fly across our bows from right to left; these are regarded as a very good omen and are hastily greeted by each Tabun with some such phrase as this, shouted out in a great hurry so that it may reach the birds before they are out of ear-shot:—

"Kabing kong ai meching yang Batu Lawi. Naam aid," which meant, as far as I could gather—"O birds, see us safe to Batu Lawi, and let no sickness befall us."

We saw or heard other birds of good omen and everyone was in great spirits, paddling along with light hearts and (more important) with vigorous arms. What *I* read as good omens were:— (i) the appearance of the well-known leaf butterfly (*Kallima inachis buxtoni*), which I saw alight on the *trunk* of a tree[*]; it is not uncommon in the Limbang district but rarely met with in other parts of Sarawak; (ii) the rare brown Papilio, *P. payeni brunei,* which flew over our heads soon after starting, and (iii) the capture of a fine male *Amblypodia narada* feeding on animal excrement on a sunny gravel bed in mid-stream; this is also a rare species in Sarawak. A little before mid-day we arrived at a long Murut house, where we stopped for a meal. The head of the house, one Klowat, wanted us to stay the night, as they were celebrating the marriage of one of the ladies of the house with a Dayak. Such marriages are by no means infrequent; a party of wandering Sea-Dayaks go off for several months after gutta and very often finding desirable maidens, two or three of them marry and settle down in their adopted country. Our boats' crew were all in favour of the project and tried hard to persuade me to accept Klowats's invitation, this was the last house we should see before reaching the kuala Madihit, at least some three or four days' journey ahead of us, so the occasion for a convivial evening seemed too tempting to be missed. However I was determined to take every advantage of the present low state of the river and push on as far as possible, knowing from bitter experience last year the difficulties caused by the least fresh; so after an hour's patient and good-tempered argument we started off again, our crew further increased by two more Muruts from this house.

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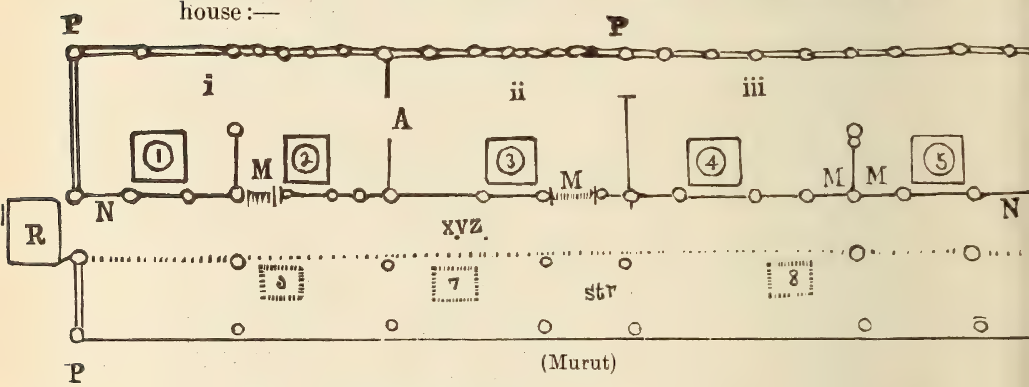
[*] Vide Wallace's "Malay Archipelago," where he records the leaf butterfly always settling on twigs. I have only once seen the species alight on a twig. but three times on the trunks of large trees. C.J.Brooks in *Journ. Str. Br-Roy. Asiat. Soc.* No. 60,1911. p. 42, makes a similar observation having captured one on the trunk of a tree and another on a leaf.

This was the third house we had stopped at on the way since leaving Ukong, and each of these three houses had been built since my visit to them last year. In 1910 Tama Belulok's house was a small tumble-down little shanty ill-becoming an important chief, and he was then meditating building a decent house; this year I found him in the same kind of house built a few yards from the site of that of last year, and again he was talking of building one of larger size and more lasting material. Tama Seluling's house had also been rebuilt within a few yards of last year's but his new one was a decided improvement on the old one and should perhaps last three years. Klowat's house had also been rebuilt, but this time a little further up the river. Last year I spent four days in his old house waiting for the river to go down, and consequently got to know something about that class of house. Like all native houses in Sarawak it was raised on wooden piles some eight feet off the ground on the high bank of the river, but out of reach of all but the biggest floods. A notched trunk led up from the water's edge over the slippery bank and another leaning against the end of the house gave access on to a rough platform. The house was divided down the middle by a wooden partition, which shut off the living rooms of each family on the left, leaving the whole of the right side open as one long common room. The leaf attap roof, highest along this centre line slopes down to within some 4 feet of the floor on each side, the space thus left was filled in with rough boards or in some places simply with split bamboo, leaving a long slit of perhaps a foot in width, running the length of the house through which one could look out. In the common verandah every-body used to gather, only dispersing into the living rooms for meals and at night to sleep; though visitors always sleep (and sometimes have their meals) in this verandah. Unlike Sea-Dayak houses there was no outer platform running the length of the house for drying paddy, as the Muruts dry theirs on the farms, but only the small one at the end, which appeared to serve no particular purpose. The side devoted to the living rooms was partitioned off unequally into five compartments, one for each family; each compartment being provided with a door and a fireplace; the dividing partitions were for the most part low and by standing up one could see pretty well from one end of the house to the other. The accompanying diagram gives an idea of the "ground-floor" plan.

As a distinguished visitor I was accommodated during those four days with a corner in one of these rooms, the other occupants being three middle-aged Muruts laides, very dirty and ugly and two small children. The woman appeared to possess but one garment each, which they never changed during the whole time I was there. My diary of April 4th, 1910, has the following note recorded in that house:—



(Murut)

i, ii, iii,	living rooms (*terkap.*)
(1)—(5),	fire-places for cooking (*tal*) fitted with wooden rack (*dran*) for drying fire-wood.
6, 7, 8,	fire-places.
M,	door (*tingga*) into living-room from common verandah.
N—N,	dividing wall of boards, bark or split rotan, (*pipi*).
S,T,V,	Common room (*sikang*).
X.Y Z,	Common passage, a step lower than the common room (*S.T.V.*), (*naduran*)
A,	dividing partition (*suman*) between living rooms, about 4ft high, of split rotan or bark.
R,	platform outside.
Q,	steps (*ichan*) from platform to ground, about 8ft.
P,	main posts supporting floor and roof (*diri*).

The "attic" formed by a few boards laid across the beams under the roof is called *parong* (Dayak *sadau*); The roof is called *bulok*; the floor, *seloi*; leaf attaps for roof, *apor*; beam supporting the rafters, *paian*; tie-beam supporting the floor, *barat*; rest for cooking-pot, *ungan*; cooking-pot, *badong*; mat, *ugum*.

Height of floor of house above ground, 8ft., of side walls to lowest part of roof, 4½ft., of middle partition to top of roof ridge 8ft.

"The Murut ladies of the house give an exhibition of feeding; a more disgusting sight can hardly be imagined (especially when one is eating in the same room) than to see these three seated on the floor stuffing handfuls of rice into their mouths and then stoking it in with their fingers........I was delighted to see an instance of a human being searching for bugs, etc., in the hair of another; this being performed by a little boy who thus amused himself with his mother's hair while she lay on the floor playing with her baby." The eating of the "captures" I saw later on. In spite of the somewhat low social status of these Muruts, they were very pleasant and friendly, always courteous and respectful, without any of that unpleasant cringing manner so typical of many Malays. The men always showed great interest in our guns and with one I exchanged an empty brass cartridge-case for one of *his* cartridge-cases; viz. a neatly carved little bamboo tube divided into two compartments, one for powder and the other for shot, with a wooden plug at each end.

After leaving Klowat's house we made good progress except over the rapids where the men usually had to jump overboard and pull the boats up. About three o'clock clouds began to gather and we pulled up at the kuala Smarpit on the left bank and made a lancho (shelter) for the night.

May 13th: (7.30 a.m. temp. 80°). A fine morning and the river still just right. The Dayak who reported bad dreams before and wanted to return for that reason, comes this morning with woeful tidings; he dreamt he had lost all his teeth. This is the last straw, so I allow him to go home, which means a half day's walk for him through pathless jungle to Klowat's house and there await for a chance boat to take him down to Limbang. I learnt afterwards that he always did the same thing, even when out with Dayaks alone; after a few days he would feel homesick, plead bad dreams and return! We leave soon after 7 a.m. and spend the whole day poling and dragging the boats up the rapids. Pass the Sertab rapid in safety; this has a bad reputation and is supposed to be very dangerous when there is a lot of water in the river; in its present condition however we have nothing to fear. Passing through sandstone we come to a limestone patch and enter the long wide reach that ends at the Kuala Saladong, late in the afternoon in torrents of rain. We find remains of some recently used lanchos, which are soon enlarged and made habitable with our kadjang coverings, and a bottle of gin to the crews helps to keep the cold out. Luckily the rain stops about 8 p.m. and the general opinion is that it is only local rain, so that it should not seriously affect the state of the river. I feel rather nervous about it, remembering a six days sojourn in this very place last year waiting for the river to subside, nor have I forgotten an attempt to advance against the flood resulting in one boat being swamped and the greater part of our baggage nicely moistened. Tama Belulok tells me how the Kalabits from the interior come down and buy buffaloes from the

Bruneis and Bisayas to take back with them. A small jungle track was pointed out to me as the road they used, and the journey, he told me, took them anything up to two months up and down a series of very steep hills; many buffaloes die on the journey, but they expect to get more than half through to the end. Tama Belulok says they start back with about 50, which they buy for about $35 each (adults) down to perhaps $15 for a young one. Kalabits always kill one at any important feast.

I note the charms hanging from Tama Belulok's belt; a small broken cowrie shell, a small piece of brass, an inch of cane, a human finger-nail (convincing proof of cannibalism!), a pair of brass depilatory forceps and a small reddish dried fruit.

During our conversation the word "k'lit" occurs, mentioned by one of the Tabuns, who does'nt know the Malay for it, and I cannot make out for some time what he means. Tama Belulok explains it thus: "a bird that has no feathers" and Madu, my Land-Dayak boy, guesses it at once and explains it as "having wings like a paper umbrella," so that at last it dawns on me that "k'lit" is the Tabun for "bat."

We saw two pigs on the bank, but no time to get a gun out before they had fled. It was near here last year that we came across a dead pig floating down stream; the natives with me at once brought it ashore and on examination found that it had been freshly killed, probably by a crocodile, and within an hour the whole lot of them were squatting round fires on the boulders by the river's edge, enjoying a feast of roast pork.

The little Saladong stream flows out just below our camping-place skirting a high white limestone cliff, which gives the alternative name of 'Salindong' to this place. One day during our enforced wait at this place last year five of my Dayaks spotted a particular grass growing on the top of this cliff; as they could only see one or two little tufts of this, they sneaked off by themselves taking great care not to be seen by the other natives of the expedition, and after a most strenuous (and rather dangerous) scramble they succeeded in gathering a clump of this coveted grass ("buloh berindu"), which they carefully divided, each becoming the proud possessor of a few blades. My most persistent questions failed to elicit any information as to their use for it, the more I asked the more amused and secretive they became, and all I could get out of them was that it was not used as medicine for sickness nor as an ointment for wounds. And it was only some months after that I was told that it had the mysterious power of ensuring success in courtship to its possessor. My diary of that date (April 10th) last year has the following note which may help to illustrate the Dayaks' methods:—"Ketit (Sea-Dayak) sells his coat to one of the Muruts of the party for $1, which he asks me to take out of the Murut's wages for him later. Ketit tells me he bought it second-hand for 60 cents in Kuching, but that he told the Murut he gave $1.50 for it! Hugely pleased with himself over his transaction."

While encamped there I ascended the hill just above the mouth of the Saladong and from an altitude of 770 ft. got a view of Mt. Obong bearing S. S. W. It did not look very far off—the natives said three days, and I should have guessed it to be but 3-4000 feet in height. E. S. E. of us we saw a long range called Pagun ending in a high peak due S. E. They told me rhinoceros were to be found there; also that the streams Madamit and Saladong rise there. The Trusan river lies East of this range. On another day I went to visit an old burial ground just above the kuala Saladong. About an hour's walk (unnecessarily long, but there was no path and the guide was a bit hazy as to the right direction) through the jungle we came to a limestone cliff; about 30 feet up this was a small cave, "Libong Seriou," to which we climbed by means of tree-roots, etc.; although only a small cave of no great depth, it seemed to be the home of innumerable bats, which, with a great whir-r-ring of wings, created quite a blast of cold air. In this cave were a number of broken jars (I counted 30 to 40) in which Muruts or Tabuns had been buried. Some of the jars were said to be very old and worth from two to three hundred dollars if they had not been broken. I had one (the least broken) removed and succeeded in bringing it safely to Kuching, and it is now in the Sarawak Museum. Knowing how particular natives are about safe-guarding their burial-grounds, as of course is only natural, I was most careful to inquire if they objected to my removing the jar; they assured me that it did'nt matter in the least, that nobody was buried there now and had not been within the memory of man, that these broken jars were of no use to anyone and that if I was anxious to take the remains of one, nobody could possibly object. So I took it, arriving in due course at Limbang with the jar and party safe and sound. Then followed an unpleasant 10 days of malaria before reaching Kuching at the end of April. This year I am warned against taking any more jars, as that, according to my Limbang friends, was the obvious cause of my fever and such was only to be expected as a reminder from the offended spirits!

Belulok told me that it was supposed to be an old Tabun burying place, although none knew for certain now; their custom, like that of other tribes of this region, is to bury their dead temporarily in one of these big jars, then place it in a cave like Libong Seriou for some six to twelve months, during which interval the body decomposes and drains through a hole in the bottom. After this interval a great feast is held, the jar is opened, and the bones taken out and placed in a smaller jar for similar burial in some other place. According to Belulok the story goes that there used to be a house on a flat rock just in the mouth of this cave, until a landslip occurred causing the collapse of the house and the death of most of the inhabitants. The few survivors buried their relations in the cave behind and from that day it became a regular burying place.

St. John records the fresh traces of a Kayan war-party at this place (Salindong), noticed on his arrival here. A long pole ornamented with three palm-leaf tassels was interpreted by some of his party to mean that the Kayans had obtained three heads.

May 14th: (Temp. 75°). Leave our camp about 7.30 and soon find the river running between narrower and more rocky sides. In one place it narrows quite suddenly and a large rock on each side gives the name of "Tiger's leap" to this part. Tama Belulok as usual sits in my boat and proves a patient conversationalist in spite of my wearying stream of questions. One thing he told me which was rather astonishing; he said that the nomad Penans have large families as a rule, averaging perhaps 6 or 7; which in consideration of their hard life was in startling contrast to the smaller families of 2 and 3 to be found among the more sedentary tribes of this region. The Penans were spoken of with disdain by the Tabuns owing to their uncleanly habits; "you can always tell a Penan by his smell, as he never washes except in the rain!" And this latter statement was certainly true of a few whom I picked up later on, although I did not observe the smell.

After 4 hours paddling we pass the kuala Tuan, where I camped for three nights last year, and after an abortive attempt to proceed further against the flood had to give up my first expedition and return defeated. Half an hour later we arrived at the kuala Sipangi, the furthest point reached on that expedition and we sit down to a midday meal and discuss the troubles of getting here experienced last year. This last reach was particularly bad, as the stream was too strong to allow the men to pole against it and only the slowest progress could be made by sending on two or three with a rotan rope, and then they had the greatest difficulty in climbing along the steep rocky sides, catching hold of any shrubs or branches to save themselves falling into the river and being swept away by the raging torrent. Not counting an interval of six days in which we went up the Madalam, as the Limbang was too high to allow us to start, it took us 12 days to reach the kuala Tuan from the kuala Madalam, while this year we had accomplised the same distance in 2½ days only. Natives say they are frequently held up for a month at a time, and at kuala Saladong we found a party of Dayaks, who, after a month's wait for the river, were just going down river again to obtain some more provisions. At the kuala Tuan, we found six more Dayaks, who said they had been waiting 20 days for the river to go down. Once we had decided to give it up, the return journey was very different, and a most exciting time we had shooting down the rapids at a great pace, missing certain destruction on rocks by a hair's breadth every few minutes. The Muruts are particularly clever at guiding a boat down these swift rivers and indeed they have to be, as many lives have been lost in these very places. Only last year the chief of the

Madihit Kalabits was drowned just by the kuala Tuan owing to his boat capsizing in the rapids there. Once or twice we shipped a lot of water and only just managed to bale it out in time for the next rapid. That return journey from the kuala Tuan all the way down to the Government station at Limbang took us just 18 hours actual paddling.

At the kuala Sipangi we were much bothered by bees, which simply swarmed on the bank while we ate; luckily no one was stung, but we were glad to be off again, leaving these unwelcome visitors behind. The country becomes more open as far as we can see it and sandstone crops up again; quite a change after the narrow gorges passed through lower down. At the mouth of a little ditch called the Delong we drew up our boats for the night (3.30 p.m.) after a long day of comparatively easy going. Soon rig up a lancho among the bamboos on the right bank and go to sleep with the comforting prospect of but one day's journey between us and the kuala Madihit, where our river troubles are to end. St. John gives a vivid account of his troubles in getting up the rapids in the gorges just passed (l. c. pp. 63-65).

May 15th: (Temp. 8 a.m. 76°). A good deal of rain last night and consequent fresh in the river this morning, however we get off at 7.30 going very slow against the rising stream. Progress for the most part can only be made by seizing hold of bushes along the bank and dragging the boat along that way until one comes to a corner where the stream is too strong to allow the boat to pass, then every one seizes a paddle and letting go the bushes paddles for life across to the other side, so as to creep up some twenty yards of slack water there as far as the next bend, when the process is repeated. The dash across the current usually involves the loss of some dozen yards and this distance has to be re-paddled. The accompanying diagram illustrates the method of progress.

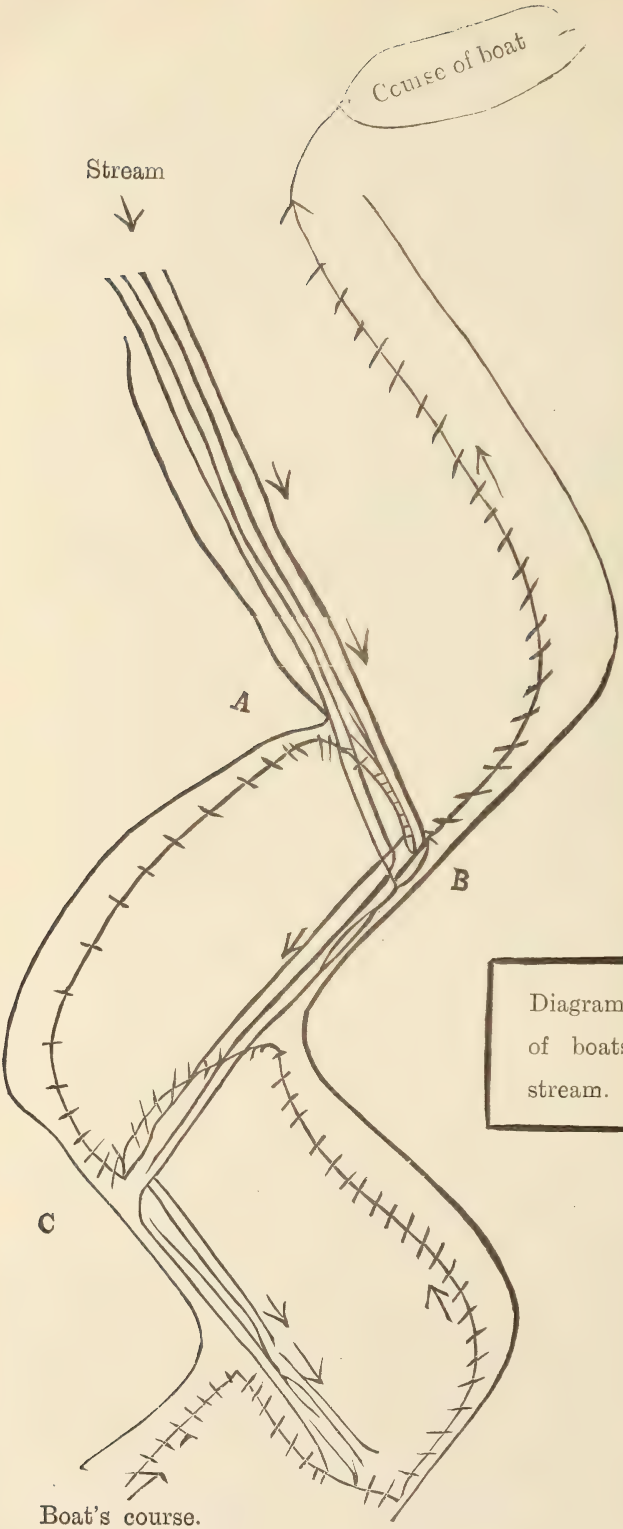

Course of boat
Stream
A
B
C
Boat's course.

Diagram showing course of boats against heavy stream.

When the stream is very strong it is impossible to get a boat round a point like that marked A, as the moment the bow of the boat enters the stream the water rushes in and swamps the boat; one then has to make a hut on the bank and sit patiently watching the river for a month, or less, as the case may be. Again when the current is pretty strong the man have to paddle all the know in order to get across from one point to another, like those marked A and B; otherwise the boat is swept down past B to the point below, marked C; then the distance A to C has to be covered again by wearily poling and dragging at the bank as far as A, where the dash across has to be attempted again.

The Tabuns say that the island at the mouth of the Delong is the site of an ancient murut graveyard, but there is nothing to be seen there now.

At one place the river made a huge horseshoe bend which took us an hour to get round by boat, while some walked across in a couple of minutes. After some four hours poling we enter a long wide reach and meet some Kalabits removing wood to build a house; these are the first people we have met since leaving Klowat's house and we pull in alongside the bank to discuss the latest news from the front. The kuala Madihit is just ahead of us and we paddle into its shady waters at 12.30, glad to get out of the hot midday sun; we congratulate each other on the successful accomplishment of the uncertain part of the journey; the rest depends entirely on ourselves now. The Tabuns and Muruts have seen or heard good omens every day and the Dayaks have had no bad dreams, which accounts for our success so far; and as we enter the Madihit, Tama Belulok hears another good bird and our eventual arrival at Batu Lawi is now assured.

At the entrance of the Madihit, the Limbang winds away to the East and according to the natives soon becomes impassable for boats. The Madihit itself is quite a small stream, pleasantly sluggish at the mouth when we entered, but we soon come to the inevitable rapid, and after half an hour's struggling reach the landing-place of a Kalabit house. Here we are met by a dozen or so clean-limbed well-built natives, headed by Tama Kuling, the young chief of the Kalabits of this district. We climb the steep bank to his house which is built some way up in the hollow of a hill; the jungle has been felled all round and the heat is consequently great. Tama Kuling only recently succeeded his father, one Saribu, a powerful chief in his time, until he met an untimely end last year shooting the rapids at kuala Tuan. His body was recovered and they are now preparing an enormous feast to celebrate the final burial of his bones. All the countryside are invited to it, the Adangs from Okap's house three days away, the Kalabits from Seridan and Malinau; most of all the Madihit Kalabits and some down-river Muruts have already arrived. Tama Kuling shows me no less than 35 great jars of tuach (the native whisky-and-very-little-soda, made from fermented rice) awaiting consumption. An average jar measures 2 ft. 9 in. in height and some 5 ft. in circumference; they hold about 23 gallons so that some 800 gallons in all were awaiting consumption! Tama Kuling wanted our party to stay for this great feast, but as they talked of being drunk for a week or more I decided against it, though by doing so it became difficult to get coolies enough to follow; our boats' crews being insufficient to carry food and baggage over the land journey. As mentioned before, from the kuala Madihit two routes to Batu Lawi offered, one to the Adang villages and then south to the mountain, the other up the Madihit and then due east for an indefinite number of days—some said three, others ten. The majority of the Adang people were expected at the feast, so it was regarded as useless to expect to get coolies from their houses, besides the rumours of unpleasant feeling between them and the Dayaks with me, which we had heard down-river, were confirmed here, so we decided on the Madihit route. Tama Kuling himself naturally could not leave all his guests to accompany us, so he deputed an elderly Kalabit, Penribut by name, to take charge of us. He was the head of the furthest house up the Madihit and was said to know the way at Batu Lawi. I went up the hill behind the house in the evening (800 ft.) and enjoyed a fine view of the surrounding hills though we were not high enough up to see the lofty mountains of the interior. In the evening we all warmed up over two bottles of gin (my contribution) and one jar of tuach (from Tama Kuling). The Kalabits seemed a little apprehensive and uncertain of our intentions when we arrived, but night time saw us all on quite friendly terms. Tama Kuling expects Penribut and his men to come in to-morrow as they have been invited to the feast. We kept it up to a late hour that night and when I woke next morning some of the "hard cases" were still at it.

May 16th: (Temp. in house 7.30 a.m. 74°). The collectors and I went off collecting this morning into the jungle on the hill behind the house, two with guns and others with butterfly nets. I was lucky enough to find a Lycaenid butterfly (*Allotinus nivalis*) in the act of attending an Homopterous larva. The Museum collectors had reported this phenomenon on several occasions before from different places and I communicated the substance of their observations to the Entomological Society of London,* but I had not then been able to make the observations myself. I first saw the butterfly cross my path and allight on the upperside of a twig, perhaps three feet from the ground, then it walked slowly round to the underside of this twig and approached a small whitish "mouldy"—looking larva (Homopterous?), *on which* were standing two very small black ants apparently feeding. The butterfly, when close enough, stood there protruding its tongue gently on to the larva,

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**Proc. Ent. Soc. Lond.* 1910. pp. xxxviii-xli. "A Lycaenid in attendance on an Homopteron" and "A further note on a Lycaenid in attendance on an Homopteron."

which stayed there quite passively; the ants also did not object, though occasionally one would walk in the way of the butterfly's proboscis and then one antenna would come down slowly as if in gentle remonstrance. Both antennae were held well back over the butterfly's head and the wings were closed erect in the usual manner of this subfamily of Lycaenidae. I watched the process for some minutes, squatting quite close to the performers.

In the evening it rained, and just before dusk we were startled by the sudden arrival of a party of Adangs rushing down the hill-side with parangs (swords) drawn. They rushed round the house in the pouring rain cutting down any low-growing shrub in their path and then climbed up the ladder into the house breathless; I was unable to find out the exact significance of this custom; later we go through the gin and tuach process again in honour of the new arrivals who have come in during the day and now fill the house. Instead of the usual dancing the Kalabits entertain us with a curious sing-song, which is quite pleasant to the ear with its full tones and gentle cadences, one or two singing a part together, others answering and then a loud chorus before beginning another verse. They went on most of the night and the jar of drink was still in requisition in the morning. This jar is stood in the middle of the long common-room which runs the length of the house as in Murut houses, and round it sit all the people. One (or sometimes two) appears to be in charge of it and his duty is to lead the visitor up to have a pull at the bamboo tube stuck in the lid, or else when the lid is off to bale out a cupful and take it round. There is always a great deal of fuss made before the thirsty visitor permits himself to drink, and after several good-tempered attempts to refuse it he eventually accepts, having insisted on the host taking a sip first. It is then a point of honour to drain the cup dry—none too easy to task when the liquid is neat gin! The head of the Adangs, Tama Kuling, Penribut, Tama Belulok and I drank each other's health going through this same ceremony; thus Tama Kuling refused the drink I offered him till I had tasted it myself and when my turn came for one of them to offer me a drink I, being in Kalabit-land, must needs do as Kalabits do, and so was equally persistent in refusing the proffered drink until the bearer of it had tasted it himself first.

The women appeared singularly ill-favoured, though cleaner and whiter-skinned than the Muruts down-river. They wore a little collection of metal rings (tin or iron) suspended from the lobe of the ear; and their arms (wrist to shoulder) and legs (ankle to knee) were usually tatooed with some linear pattern. Their only garment was a short skirt, which some writer has rather aptly described "as beginning too late and ending too soon." The men wear a long tooth (tiger-cat's or bear's) through the hole in the upper part of each ear and sometimes a brass ring or lump suspended from the lobe as well. I measured a few Kalabits in the house and found the height of adult males varied from 5 ft. 1 in.

to 5 ft. 6 in. They spanned more than their height by some 2 inches or so in every case. A Murut, Balang Alar by name, a fine tall well-made fellow with long thick hair reaching below his waist measured 5 ft. 9 in. and seemed to tower over his neighbours.

In this house I noticed a curious pair of antlers hanging up on the wooden partition which run down the middle of the house. Unfortunately I do not know the right way of describing them and my intention of photographing them on my return was frustrated through alterations in our plans, which prevented my returning to that house again. My note-book has the following:—"four stout branches (2 on each side), these branching off again into blunt wide projections, totalling 14 points in all. Tama Kuling's father bought it from the Pabawan people years ago and according to them it belongs to a "rusa" (*Cervus equinus*), but it is so different from that, that I think it must belong to a different animal." I tried to purchase it, but Tama Kuling did not want to part with it. Later he gave me some rice for our men in exchange for some yards of red cloth. I also presented him with a whistle which pleased him quite a lot. He was most particular in regarding my cloth and his rice as *presents*, and strongly deprecated all idea of the transaction being in the nature of a *purchase*.

Tama Kuling, Balang Alar, the tall Murut, and one or two of the other Murut visitors from down-river talk Malay, but the rest cannot talk that language or Dayak. It is curious to note the effect of the enterprising Dayaks who are spreading rapidly over this and adjacent districts, for in many Murut houses the inmates talk Dayak but not Malay; one Murut I remember last year seemed almost hurt that the language I spoke (Malay) was not the same as the foreign tongue he had learnt (Dayak), "jako Iban aku namu," he said, "tapi jako nuan enda namu aku." ("Dayak I know, but your linguistic efforts beat me altogether"), so I had to try my best Dayak on him, resulting I'm afraid, in but indifferent success. The Tabuns seemed most at home in this language question, talking Malay, Dayak, Murut and Kalabit with equal ease; these two last dialects are certainly very close to Tabun but are nevertheless quite distinct, so much so that a Trusan Murut with me could hardly make himself understood at all when talking to a Kalabit and his persevering attempts used to call forth shouts of laughter from his Tabun friends. He talked Malay and Dayak to a certain extent. Two of my Dayaks knew Murut well, having married Murut ladies, but they could'nt understand any Kalabit. Our new guide Penribut (Kalabit) an oldish man with a cheerful smile and a great capacity for drink did not understand a word of Malay or Dayak, but appeared to talk Murut easily enough. St. John's journey was made by the Madihit, and although he records the traces of a former Chinese colony there, he makes no mention of any other settlers in the Madihit.*

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*"To show how extensively the Chinese formerly spread over the country, I notice that they had pepper plantations even up the Madihit as late as the remembrance of some of the oldest Muruts." (*l. c.* p. 73).

May 17th: A certain amount of thick heads this morning and consequently rather slow in getting away. Our plan is to get up the Madihit to Penribut's house by boat as far as possible, wait a day there for coolies and rice, and then walk overland to Batu Lawi. The eleven Pandaruan Dayaks make some trouble over the shortage of matches and even say they want to return on this account. I had foolishly trusted to some patent lighters which I thought would withstand the wet better than boxes of wooden matches and in consequence had not brought many boxes of matches. Unfortunately they also withstood our attempts at striking a light, however some of the Tabuns had brought a few packets and by taking a little care we were able to make them last out all right. There is a strong fresh in the Madihit so that we can use boats, though progress is necessarily slow against this strong stream; without the fresh the river would be too dry to allow boats to be used at all. At 3 o'clock clouds began to gather and we stop to make a lancho on the left bank. In the evening we catch a large number of moths flying to the lamp on the "krangan" (stony river bed) below our hut.

May 18th: (Temp. 7.45 a.m. 73.5°). Break camp early and after breakfast start off again (8 a.m.), soon encountering steep rapids. Pass the kuala Rawan on our left and later on the kuala Tera (? = that marked in St. John's map as Petra). The boats are dragged up with some difficulty and we come later to a bad place called the Seridan rapid; here Tama Belulok says he has been wrecked twice, losing most of his belongings each time. Just above this we come to the kuala Aripenou and find a small Kalabit house on the right bank. It is impossible to get the boats any further up the river and although it is only one o'clock, Penribut's house is too far off to reach to-night, so we haul the boats up and have a refreshing bathe—a daily joy in the latter part of this up-river journey safe from the fear of crocodiles, although the natives say that they are seen right up these streams even as far as this, but they never attack human beings; after the bathe, a meal and then a ramble in the jungle behind the house. Some Kalabits arrive in the afternoon from Tama Kuling's house, havig left early in the morning on foot, doing the journey in about 6 hours (without carrying baggage) while we have taken a day and a half to do the same distance by river. Penribut arrives later and finds me bathing at the landing place. He makes a picturesque figure fording the river in his bark war-coat ornamented with the black and white tail feathers of a hornbill hanging over his shoulders; the front of the coat (which by the way is armless) is much shorter and is ornamented by a large round pearl-shell;* a blue chawat (loin cloth), his hair twisted in a knot at the back of his head and fastened with a long iron pin (about 9 inches and about as thick as a big French nail) and a spear in his hand completes the picture. Belulok tells him to shake hands with me, apparently a novel proceeding to him, and then he joins me in my bathe, taking care to bathe below me so that I shall not get his wash!! I have been told that in certain places natives make a point of bathing in the stream below a European while he is bathing above, so that they can enjoy the water tainted by him and thus partake of some of his superior (?) qualities. The same principal is in evidence when a Malay shakes hands with a Hadji (man who has done the pilgrimage to Mecca) and draws his hands away from the Hadji into his own chest, with the idea of partaking of some of the Hadji's holiness. Malays and many other natives do it too after shaking hands with Europeans, though the actual good obtained thereby in some of these cases must be a little doubtful.

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* See Ling Roth, vol. 2, pp. 101 and 103.

When we arrived at this house there was hardly a soul to be seen, most of the men being away feasting at Tama Kuling's and the women were too afraid to come out of their rooms for some time. Belulok told me a message had been sent from Tama Kuling's house the night before to advise them of our coming and to assure them of our peaceful intentions, otherwise they would all have fled into the jungle.

After a few friendly overtures to the smaller children of the house in the shape of a biscuit or two, their shyness disappeared and the inmates began to show themselves. I found it always answered remarkably well to pay attention to the babies, as that seemed to dispel any feelings of distrust at once; the women beamed silently at one, while the men were more disposed to help. The men themselves seem to pay more attention to the children than do their mothers, for in every house one would see a proud father or two strolling about with a child on his back, no matter whether he was an important chief or not. Thus a request to the chief for the loan of a boat was certain to be acceded to without further trouble, if one adroitly oiled the way first with a sardine for the chief's baby son! Noticed a small monkey ("brok") *Macacus nemestrinus* tied up to the house, the first pet I have seen on this journey, except for countless ill-fed dogs which are the greatest nuisance in every house.

May 19th: We are still short of men to act as carriers and we have to leave some things behind, such as kadjangs and food for the return journey. We get off at 8.30, thirty-nine of us in all and a Dayak, a Chinaman and myself, the representative of Europe. The path almost at once leads down and cross the river, then up a steep bit on the left bank, past the site of a former Kalabit house visited by Mr. Ward in 1907; the posts were still remaining, but no more, the people having moved elsewhere; then up to 1,400 ft. and later to 1,700 ft., the path running along the top of a range of hills running more or less parallel to the Madihit; in one place we pass a solitary jar standing by the path; this is pointed out as containing the remains of a Kalabit, who died last year; at midday we descend to a small stream, the Gritang, where we feed. According to St. John's map this stream should be on the other side of the Madihit and I learnt later that there was another stream of that name flowing out on the other bank just at the same place as the Gritang joins the Madihit from our side; and some days later we passed two streams of the same name flowing into the Madihit, one on either side.

After the Gritang the path cuts inland away from the Madihit and we climb a range of hills further west to those which border the Madihit; between the two hills is a wide valley and perched right on the top of the hill opposite us we see Penribut's house. The path winds round to the head of the valley and so across until we arrive a little after 4 p.m. We have come practically due south from the mouth of the Madihit, the general direction of the Limbang from the kuala Madalam to that point being south-east. We stopped once or twice on the path by some curiously marked trees. A smooth strip had been cut on the trunk and some charcoal figures drawn to represent guns, buffaloes, jars and boats. Tama Belulok explained that these were records of other parties that had passed that way; some three or four circles he explained meant they had been travelling three or four months and some other marks he interpreted as the number of lumps of rubber obtained by the party! We left *our* mark for the information of the next passers-by.

Penribut's house is built across the top of a hog's back ridge at an altitude of 2,100 ft., and consequently gets a continual gale blowing through it from one side of the valley or the other, and the smoke inside was something awful. We were met outside by a short ugly man with close-cropped hair who came down the steps of the house to do the honours in the absence of Penribut, who was following a little way behind. They told me that he had recently lost his wife and that was the reason of his shaved head, which looked very out of place among all these men with fine long hair flowing down their backs. Apparently it is the custom among the Kalabits, Muruts and Tabuns, for a man to shave his head on the death of his wife, and again when her bones are removed to their final resting place after the temporary disposal of some six months in a jar. After the final burial the widower may let his hair grow again. The same rule applies to a woman who loses her husband; she has to shave her head too. In Tama Kuling's house I noticed two people (man and woman) distinguished by this sign of bereavement. Tama Belulok tells me the custom is not observed on the death of a parent or child.

a parent or child.

While sitting in Penribut's house in the evening, we heard a sudden commotion going on behind the wooden partition which runs the length of the house dividing the living rooms from the common room. Instantly Penribut got up to see what was the matter and he was soon followed by about ten other Kalabits who all disappeared into one of the rooms; the noise continued and seemed to come from several babies and women screaming at once, helped by discordant cries from the men endeavouring to make them quiet. Eventually we learned that it was a baby crying—"sakit tolach," as my people explained it, meaning that it was a fit, paroxysm of anger (?) or delight (?) brought on by our arrival. One of the Kalabits brought out a small plug of wood which they asked me to spit on; this done, they took it back, touched the child's hand and body with it, and the cure was complete; peace reigned once more and we resumed our conversation about plans for to-morrow. The Tabuns and Dayaks took it all as a matter of course and I gather that the same thing is done with them. The commotion among the Kalabits for the moment was quite remarkable.

As mentioned above, the house stands on the top of a hill and a magnificent view of the surrounding country is thus obtained. To the west, i.e., straight across the valley below us is the range of hills which we came along to-day, behind them rise Molu and Obong where the Seridan, Malinau and Tutau rivers have their source; to the south-west there are some high mountains which must be in the Baram district about the head of the Akar; in the south and to the south-east are more hills which they say border the Bar country; due East of us they point out a little rock as big as my thumb peeping over the top of a great black range of mountains on the horizon: this is Batu Lawi, the object of our journey, and we have to reach that range of mountains before we can *see* any more of it, let alone get to it! In spite of warnings received on the way here, we point towards it, and almost at once a black cloud comes up and hides it from our view, then more clouds and the country east of us shows signs of rain, then a few drops and we too are in the thick of it. Batu Lawi has vindicated its reputation already. After a fortnight's fine weather enabling us to get thus far in quite good time, we have but to point at this dread mountain and down comes the rain. [To get ahead of my diary for a moment, I may say that it continued wet for practically the whole of the next fortnight!]. To the north and north-east of us lie the Adang hills stretching away towards that huge range in the East; the valley below us runs north and south, the northern end opening out at the kuala Madihit.

May 20th: (Temp. 73.4°). Out early this morning, only to find the place in thick clouds and everything sopping wet. Last night (1 a.m.) we were awakened by a terrific crash of thunder, immediately overhead; this was followed by torrents of rain, which speedily came through the wretched leaf roof. I got a kajang rigged up over me, but not before most things were wet. The smoke is most irritating and everyone is coughing and choking from it. Most of the inmates have watery eyes and no wonder. It is the same type of house as the other Murut and Kalabit houses we have passed, and in the common room there was three fire places in use. besides the others in the living rooms. The raised flaps of the roof under which we sit draw all the smoke out and the only habitable spot is on the wooden platform outside the end of the house; it is quite nice sitting out there in the evening with a glorious view all round, but too hot to stay there in the heat of the day. A scaly ant-eater (*Manis javanica*) is brought in having been captured by the dogs of the house.

Owing to the thickness of the mist they will not be able to dry any paddy to-day for us to take, so we shall have to wait here to-morrow before starting off again. There appears to be no chance of getting any more coolies, so all we can do is to carry enough food for ten days, which should enable us to do the journey to Batu Lawi and back and no more; but I hope we can shoot something and find a little jungle produce to enable us to stay there a few days; however the chief thing is to get there first.

Went out in the morning down the hill on the north side of the house and heard the waters of the Madihit below us. It appears to run in a south-easterly direction (i.e., following it from the mouth it runs south as far as the kuala Aripenou and thence south-east past this hill). I cannot make out which is Mt. Obong and which is Mt. Molu of the high peaks in the range to the west of us; this has been a source of argument the whole way up, some saying one thing and others flatly contradicting; the only thing that is clear is that the whole range is the Molu Range; the highest is a double peak and to the north of that (in the same range) are four other peaks whose bearings I read as 281·6, 290·4, 287·5 and 300·2 respectively. The first they tell me is the source of the Seridan river, which runs into the Mago and thence into the Tutau and Baram.

May 21st: (Temp. 76°). A nice fine morning and every prospect of drying the paddy and getting off to-morrow. After a bathe under a bamboo pipe stuck into the hill side,—the only water to be obtained here, we go off collecting in different directions. Catch some interesting insects, among them an interesting female Chalcosid moth, which mimics the common Pierine butterfly *Terias hecabe;* the male is entirely different in colouring and pattern.* The beautiful *Papilio brookeanus* appears to be common. The collectors bring in a large male "brok" (*Macacus nemestrinus*) and a fine bushy-tailed squirrel (*Rhithrosciurus macrotis*).

I amused the company and myself by measuring the right-hand thumb to little finger stretch of 25 men (adults). They were as follows:—

Sea-Dayaks.	*Tabuns.*	*Kalabits.*	*Muruts.*
21.4 cm.	21,4 cm. (Belulok)	21.8 cm.	20.7 cm.
20.—	20.—	19.7	19.9
21.4	20.—	20 6	—
21.—	19.2 (Tama Be'ulok)	20.3	

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*Mention is made of this instance of mimicry in a short account of mimetic Bornean insects by the writer, recently published in the Proceedings of the Entomological Society of London. 1911. pp. lxiii—lxxx.

19.4	18.3	20.—	*Land-Dayak.*
20.8	20 4	20.—	18.9 cm.(Madu).
—	—	21.2 (Penribut)	—
		21.2	
European.			*Chinaman.*
25.—cm. (myself).			20.2 cm. (cook).

I also obtained Penribut's permission to measure two old skulls which were hanging up on the centre wall of the house. He offered no objections, but seemed a little nervous lest I should want to take them away with me. The measurements were as follows (worked out with the aid of little volume issued by the Royal Geographical Society for the use of travellers) :—

	I	II	
Length from fore-head to occiput	190 mm.	172 mm.	Callipers.
Greatest breadth	131 mm.	134 mm.	do,
Circumference fore-head to back of head)	534 mm.	495 mm.	Tape.
Shape	ovoid	ovoid	—
Front edge of foramen magnum to top of nose.	102 mm.	106 mm.	Callipers.
do. to juncture of front teeth.	101 mm.	100 mm.	do.
Outer edges of orbital bones	114 mm.	113 mm.	do.
Outer edge (widest measurement) zygomatic arch	—	130 mm.	do.
Vertex to below chin	185 mm. jaw very prominent. adult male.	183 mm. jaw not prominent. senile male.	do.
Cephalic index $\frac{(B. \times 100)}{L}$	68.977.9		

Both skulls were old and black with smoke; according to Penribut, probably Muruts of the upper Trusan or Bar country; but no very exact data forthcoming.

There is a wretched cripple in this house with a tied knee joint, which keeps him for ever in a squatting position, so that he can neither stand or sit; he seems quite cheerful. The women are cleaner, pleasant-featured and friendly; they are not at all shy and watch me bathe under the bamboo pipe with much interest; we try a conversation but without success, neither of us being able to speak a language known to the other. Like the Kalabits at kuala Madihit, they are tattooed on the legs and arms, and they boast but one garment, a short dark blue or black skirt; their hair is loosely fastened up behind and ornamented with a broad band of beads worn like a cap. These beads are their only possession of value, and I was told that an insignificant light brown type of bead, if genuinely old, was valued the highest.

A Kalabit from the Seridan brings dire rumours of disaster to Tama Belulok's relatives in the Tutau (Oyau Blawing's house) ; he says the inhabitants of the whole village (some 30 families) have died from some new disease about two months ago, except for five people. Tama Belulok and his people are much disturbed at the news and suggest a desire to return. Luckily we had only just been discussing the unreliability of rumours heard in a far off country like this and I was able to show that one of them at all events was quite inaccurate. Belulok had told me that the news of the Rajah Muda's death had reached him last year and that it was generally believed all over that district; he was quite surprised to hear that, although it was true the Rajah Muda had been very ill, he had quite recovered now and was expected in Sarawak again before long. There was another rumour current here to the effect that a Dutch Controlleur had been killed by the natives in the head-waters of the Batang Kayan not many days journey from here; this too I contradicted, having heard in Sarawak that this Dutch official, reported missing for some time, had come through safely after all. [I heard on my return in July that there was probably some truth in the Kalabit story after all, as inquiries were still being made for that particular official]. It took a long time to persuade the Tabuns not to take this rumour too literally and I went so far as to predict that it was more likely five men had died and the rest survived, not the other way about, as the Kalabit reported. Yet another story was current, this time, that the Government had forbidden any Kalabit to go down river for four years because of this dread disease, and further that if any of them disobeyed, the down-river tribes had been given permission to take their heads!!

Tama Belulok is ill with fever to-day, and is afraid he will not be well enough to go to-morrow.

May 22nd: (Temp. 75°, cloudy). Begin dividing out the rice, a tedious job which might have been done with advantage yesterday. Tama Belulok is worse this morning and decides to stay behind; I leave one of his men to look after him; Belulok (his son) takes his place as my chief adviser and interpreter. He took charge of my expedition last year, and feels that our failure then reflects in some measure on him, so that it is incumbent on him to get us through to Batu Lawi this time. Although quite young, he has a useful influence over the men; his information is usually reliable and his advice is undoubtedly sound. The worst of so many of these natives is that they never mind being shown up as liars, and they lie again at the first opportunity if it is to their interest to do so. For instance, when they wanted to stop at Klowat's house for the Dayak-Murut wedding (ten days ago) some of them swore positively that there was no place for us to spend the night between there and Salindong which we could'nt possibly reach that night. Unfortunately for them I had been there last year and so knew the nature of that bit of river, with the result that we pushed on and found quite a good place for a lancho (kuala Smarpit). Nearly every day similar instances cropped up, many that did'nt matter, but some that did. Belulok was one of the few who never let me down in that way—at least, not that I know of. They did not of course do it out of sheer perversity, but generally as an excuse for a delay or else in actual ignorance of the subject I inquired about. We start at 9.30 and follow a winding path through the jungle in a general easterly direction arriving at the Madihit again about 2 p.m. The river runs nearly north here but bends away to the west below us and to the east again above us. Penribut says the path leads straight up into the hills now and the next place for water is a long way ahead so we must spend the night here. We have had several stops, resulting in a balance of three and a half hours walking only—a poor day's work. However I feel I have had quite enough and am glad to stop, especially as it is raining hard; we make a lancho on the right bank above and enjoy a delicious bathe in the cool clear water below, altitude 1,300 ft. Below us two little streams flow out into the Madihit from either bank; both called the Patud.

May 23rd: (Temp. 6 a.m. 69°). To-day nice and fine again; I hope to get in a long day's march.

This no sooner written than Penribut is reported to be desirous of staying here another day on account of a bad omen heard a few minutes ago, which warns him of trouble if he starts. After much persuasion with the help of Belulok, he goes back to his lancho to get ready his things for marching; only to return shortly after looking more obstinate than ever, having again heard the evil bird, which he says absolutely prevents his doing any journey to-day. After much good-tempered, but useless, argument I try to compromise and say that two of his men may stay and propitiate the bird provided they can get their friends to carry their loads. But this proposal is not acceptable so I insist on them all following, birds or no birds; and this they do with a good grace, although we have lost a good half hour by talking. Path leads straight up the hill and maintains a general easterly direction; I note the following altitudes: camp above the Madihit 1,400 ft., then up to 1,900 ft., 2,200 ft., 2,400 ft., 2,700 ft., 3,000 ft.; down to 2,720 ft., then up to a steep 500 ft. to 3,220 ft., whence we get a good view of the two peaks of Batu Lawi; the higher and steeper peak like a chimney lies to the north, the lower and more rounded peak to the south. The big range still impedes our view of the lower portion of Batu Lawi. To the north and parallel to us run the Raya Hills; the tall virgin jungle hides all other views.

Saw two specimens of the "moth-like horsefly" mentioned by St. John,* the first I have seen in the jungle though the insect—a Cicada (*Tacua speciosa,* Illig.)—is not rare at lamps in Sarawak. Later we disturbed another large Cicada (*Pomponia diffusa,* Bredd.) which flew straight into a large spider's web, where I watched it for some time struggling hopelessly to free itself; it was eventually "rescued" with the aid of butterfly net. Considering the strong flight of the insect and its size (with tegmina expanded it

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*"I found today, just as we were crossing the ridge, one of the most curious insects I have ever seen; it appeared like a gigantic moth, above four inches in length, and was of a brown colour, with a band of bright green just across its neck; although it had the look of a moth, on closer examination it proved to be a great horsefly." Spenser St. John, *op. cit.* pp. 85-86.

measures 150 mm., while vertex of head to end of abdomen measures 48 mm.), it was rather surprising that the web should hold it so effectually . Belulok caught a large Sphingid (Hawk-moth, *Oxyambulyx substrigilis,* Westw.) by the side of the path. Rain again in the afternoon which developed into a heavy thunderstorm as we stopped to make a lancho for the night (alt. 3,100 ft.), and now as I write (8 p.m.) it has started again with renewed vigour. We passed little streams or pools of water in two or three places on the way and I pointed out that the first or second would have done well for last night's lancho. At 2 o'clock this afternoon we came to one and the Kalabits wanted to stop with the same excuse as yesterday, but this time I said he would push on till we did find some more water. With our short supply of food, the long distance to be covered and the uncertainty of the path, it is necessary to push on at every opportunity.

May 24th: (Temp. 6 a.m. 67°). Several of the party with bad colds, and cuts and sores on their feet, but generally cheerful. Our path to-day leads along the top of a ridge at a fairly even altitude of 3,100 ft. for two hours; then up to 3,700 ft. and after a short descent we have another long climb up to the summit of this part, 4,000 ft., which according to Penribut is called Mt. Turan.

Although the natives with me have not been able to recognize any of St. John's names for the mountains of this part, I think St. John must have reached this range and then turned north towards the Adang villages. His route appears to have run parallel to mine from the Madihit to the Limbang, only further to the north and over a lower country as he records 2,500 ft. as the highest altitude crossed between the two rivers, while we have already touched 4,000 ft. (and later 5,000 ft.) without coming to the Limbang yet. Our general direction is still East, and the path shut in on all sides by old jungle prevents our obtaining any veiw except for an occasional glimpse though the trees on some of the higher elevations. We camp late in the afternoon to the usual accompaniment of pouring rain (alt. 3,900 ft.). Thermometer down to 67° at sunset. One of the collectors shot a rare Oriole (*Oriolus hosei,* Sharpe). Rarely seen or hear any signs of animal life, except for the occasional cry of a Wa-Wa (*Hylobates mülleri,* the Gibbon). Water has not been found all day, except just now at a little pool some way below our present camp, and we have had to satisfy ourselves with some from the roots of trees, which hold quite a lot when one cuts off lengths of the right kind. Penribut says we shall reach the river Kri to-morrow where we shall see the whole of Batu Lawi quite close; he does not know the path any further than that. Temperature 67° at sundown.

May 25th: (6 a.m. temp. 65.5°). Left camp early and at once continue the ascent reaching 4,460 ft., the head-waters of the Madihit are pointed out running parallel to us in the valley below on our right; our general direction is E. S. E. until we reach a high ridge and follow it south, alt. 4,700 ft. to 5,000 ft. This is evidently the top of the high range which barred our view of Batu Lawi from Penribut's house, as we can now see through the trees the whole mountain opposite and apparently quite close. We camp in a sheltered hollow a little way down the eastern slope of this hill, which is called Mt. Derian,* having walked for a bare three hours from our last camping place; temperature at 2 p.m. down to 62° Fahr. (rain). Our first day's walk was similarly short, so that it ought to be possible to accomplish the journey so far in two long days' walk instead of four. However yesterday and the day before were long and tiring, up and down these steep hills, and the men are heavily burdened. I have just said that we had a fine view of Batu Lawi from this point, but as a matter of fact the jungle is so thick that one can only catch a glimpse of its outlines and for the greater part of the day it was hidden in clouds. Madu, my Land-Dayak boy, volunteered to climb a tree and off came his coat with which he tied his feet securely together (or rather about twelve inches apart) and up he went hand over hand, gripping the trunk of the tree with the soles of his feet which were prevented from slipping by the coat. He soon disappeared up the smooth straight trunk into the branches high up over our heads, out of sight and almost out of earshot. He told us, when he came down, that there appeared to be a deep valley between us and Batu Lawi, but that two spurs sloped down towards it one on our left and the other on our right. Poor little Madu, he died from dysentry three months after we got back. He stood about 4 ft. 10 in., but strong and well-made at that; always bright and cheerful, the life and soul of the party, everybody made friends with him at once; many a time he amused us greatly ordering the Kalabits and Muruts about in a loud voice and it was quite wonderful to see how they did what he wanted, for they did'nt know a word of each other's language. I had been particularly keen to bring him for that particular reason, as it has been suggested that the Land-Dayaks and Muruts show evidences of relationship in their languages. I frequently made him talk Land-Dayak to both Muruts and Kalabits, but they never understood him nor could they find a word in common. Also, try as he might, he could only understand a word of Murut or Kalabit. Later we tried with Penan, but beyond a few words of wide distribution in Malaya (such as *ramin,* house, *ta'in,* stomach, *dipeu,* tooth, etc.) their languages proved quite unintelligible to one another. Madu was quite a travelled native, especially for a Land-Dayak, who as a rule is rather stay-at-home and unenterprising;

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*According to the natives, so-named on account of a huge Durian? tree growing on the path along the top. The tree was certainly unlike the cultivated Durian and according to my Dayaks, quite unlike any wild Durian; one suggested subsequently that 'Derian' was the Kalabit for 'Dian', meaning that the tree was one of those kinds whose bark makes good torches. We were unable to solve the point.

he had been in Singapore and the Native States, besides having travelled in Sarawak a good deal. We had talked over several expeditions to be made together in the future, but alas, now to no purpose.

Rain all this afternoon and temperature down to 62° at 2 p.m. A few mosquitoes in the evening—rather surprising at this altitude.

May 26th: None of the party know the way any further and there appears to be no path except the one we have come by and that continues south to the Bar plain as far as I can make out; it is so overgrown and hard to find that Penribut missed it several times on the way here. A small party go out to look for some sort of track, others go off collecting, while a few remain to cut down some trees so that we can dry our things in the sun. Since leaving the Madihit we have hardly been in the glare of the sun a moment owing to the dense jungle over our heads practically the whole time. Clothes have been dried (or rather smoked) over fires whenever opportunity offered.

In this wet and cold spot, with the thermometer at midday under 70° (it varies from 62°-67°) there seemed to be a great absence of animal, bird and insect life, and the "din" of a tropical night was noticeably absent. One occasionally heard the warning crack of some giant of the jungle about to fall.* The natives always took great care to build our lanchos out of reach of any rotten trees. Eight Kalabits arrive with the remainder of our baggage which was left at Penribut's house for them to bring. They should have joined us there, but said the Madihit was in flood so that they could'nt get across. The head of them, a sour-looking individual, Lawaratu by name, is supposed to know the path all the way to Batu Lawi, but now informed us that he does not. The path-seekers returned with the report of a hopeless track down the river Kri which rises just below us; they suggest looking for another path to-morrow. Belulok estimates it as two or three days yet before we get there; it looks to me but one day's walk. St. John must have reached the northern end of this range before turning north to the Adang villages which are said to be about three days journey from here. Mt. Derian rises to the westward higher than I thought, about 5,200 ft. and to the south and parallel to it there runs another short range with one high peak about 5,600 ft. The Madihit is said to rise between these two.

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*As an instance of the danger of falling trees I may mention a narrow escape I had on another occasion (on trip to Mt. Klingkang). After walking for some hours our party came to a tempting stream and many of us bathed in the cool clear water. I had only finished and climbed out of the pool a bare two minutes, before a huge tree fell right across the place. There was no wind at the time, and but for a warning crack before its actual fall, some of the natives might easily have been caught. In an interval of five days no less than three large trees had fallen along or across our path to that mountain, in a distance of some seven miles.

The natives in their scanty clothing find it very cold at night, many of them lie huddled up round the fires. One or two complain of fever, others of stomach trouble or colds. The food is getting short so we cannot afford another day here looking for a path.

May 27th: (Temp. 7 a.m. 63°). We start off along the mountains in a southern direction, then descend east to the river Kri, alt. 3,700 ft., continue down that river knee-deep till 11 a.m. when we come across the remains of a hut recently used by Dayak gutta-hunters. It has been a most tedious morning scrambling along the river bed, or river bank, over huge boulders, "tight-rope-walking" along fallen trees which the natives invariably makes straight for, regarding such as Heaven-sent bridges; the European is inclined to regard them in another light, especially when they span a mountain torrent, swirling along some thirty feet below one. The Kalabits wanted to stop at this place as we could find no trace of any further path, so we did—but only for a meal and then on again up the hill, Bululok and I acting as guides. By my compass I knew that Batu Lawi was on our right and that by following the stream on down any further we were likely to be led too far to the north, so we cut straight up over the hill, a stiff scramble on hands and knees with parangs in constant use to cut a way through the undergrowth, which was not very thick luckily, owing to the tall trees overhead. The natives with their heavy loads had a bad time of it, but some of them deserved it for pretending not to know the way. The Kalabits in particular have seemed more and more disinclined each day to bring us to Batu Lawi; they must know the way in reality, as they once lived quite near here, according to Penribut; although I have not heard them mention it, I think it is because each day brings us nearer to the country of their enemies, the dread Pa Brian people, who live the other side of Batu Lawi. Later we struck a path running more or less in the right direction which we followed for some two hours and a half. At one place we were startled at seeing fresh blood on the ground, and an examination of the leading half dozen showed that it could not have come from any of them, as although most exhibited the attentions of leeches, cuts or other wounds, none could have been the cause of so much blood. We looked in vain for traces of some animal; some uneasily murmured "munsu" (enemy) and for some ten minutes we sat down and discussed the mystery; eventually a Murut joined us and owned up to a nasty cut across the hand which thus explained the whole thing, as he had been sitting on that spot some time and then gone off down the hill side to look for water to bathe it. But for those few minutes we were much puzzled by the unpleasantly suggestive "mystery." There was a fine rubber tree (gutta rian) close by here, and the Dayaks pointed out several of one kind and another on our journey; these tracts of virgin jungle must still be very rich in this kind of produce, as natives from down-river seldom venture so far as this, and the scattered inhabitants only work sufficient to meet their immediate wants, i.e., enough to pay the annual tax of $2 to Government and to support them on the rare occasion of a visit to a bazaar down-river or on the coast.

Our path led down to a tongue of land formed by the junction of two streams, both called Kri according to Penribut, alt. 2850 ft. Crossed and camped on the right bank, just succeeding in erecting the huts before the rain came on. Examined the provisions with Belulok and find they have enough for four days more. Cheery prospect, seeing that we are not at Batu Lawi yet and that we have taken six days to come so far. However there are some sago palms near by, which they will have to utilize together with any animals we may shoot.

May 28th: (Temp. 7 a.m. 70°). We ascend the hill behind our camp and then descend almost immediately to another stream, the Limbang again, alt. 2,630 ft., only much smaller than when last we saw it at the kuala Madihit. There was a good deal of water running and we crossed with some difficulty having a very stiff scramble up the high precipitous bank on the other side, followed immediately by a weary toil up a thousand feet and down again to yet another stream, the Palabar, alt. 2,700 ft. Most of us had good cause to remember that steep climb up from the Limbang as we had to pass a hornet's nest. I was bitten through the sleeve of my coat and had a swollen arm for the next two days; several of the others suffered too.

The natives of this part refer to the Limbang as the Pa (River) Brunei and I was told that formerly the main outlet was through Brunei; this has become more or less silted up and only a narrow ditch remains, while the river has taken a sharp bend to the East, flowing out into Brunei Bay at the Limbang mouth, as we now know it. Batu Lawi should be very near now and with every hope of being on it before night-fall we cross the stream and start another steep ascent for the most part pathless, eventually reaching an altitude of 4,400 ft. where we have to camp as we are doubtful of finding any water further up. The last hour or so in pouring rain, and rather than stand about getting cold, Belulok, a Dayak and I continue the ascent, leaving the others to make our shelters for the night. From the occasional glimpses we have had of Batu Lawi I thought we were actually on the lower slopes of it, but Belulok thought otherwise and so it proved, for a rough scramble up roots and moss-grown boulders brought us to the summit 4,850 ft. and there just opposite to us with a broad ravine between stood Batu Lawi emerging for a moment through the driving clouds. From St. John's map I take this mountain to be Selinguid, though none of our people know that name and the Kalabits profess all ignorance of the name of the mountain. [It struck me afterwards that it was possibly no sheer "cussedness" that made the Kalabits refuse to utter the names of these places for my information, but more likely that they held the place in such awe that mere mention of its name would bring disaster. Thus many natives in Sarawak when asked will not give the name of their destination (i.e., if it entails a lengthy and perhaps perilous journey), for fear of exciting the wrath of the guardian spirit of that place, so they refer to it in very roundabout terms. The name Batu Lawi was hardly if ever mentioned (except by me) during the days we approached it, and I noticed that the Tabuns did not seem much surprised at the absence of any known name for Selinguid. The superstition is I suppose much the same as that which forbids a Sea-Dayak to mention the names of his parents-in-law and those of their relations; or to give his own name when asked. In this latter instance he usually turns to a friend with a nod as much as to say "Tell him my name, he does'nt know our customs or he would not have asked me." Many have their names very conveniently tatooed on their fore-arms, so that when one wishes to ask this awkward question and no friend is near to help, the arm may be produced for the silent inspection of the questioner].

The summit of Selinguid is bare of all trees and only covered with a tangled mass of shrubs and moss which effectively cover some splendid pitfalls between huge great blocks of stone. Batu Lawi was close enough to enable us to make out individual trees and the perpendicular stratification of the rocks; the lower of the two peaks looks easily climbable, but I doubt the possibility of being able to climb the higher one, which rose sheer for some six hundred like a chimney, practically bare of all vegetation. It bore due East of Selinguid and this accounts for our mistaking Selinguid for the lower slopes of Batu Lawi, when trying to make out the lay of the land through the trees on Mt. Derian due west of us. Thick clouds develop into heavy rain and we decend to the camp arriving just before dark, after a weary day of nearly ten hours' walking. The beautiful cool climate and mountain air however allow one to do it without feeling anything but healthy fatigue at the end of the day, which all passes off after a sound sleep in a really cold night. At dusk the thermometer registers 63° in the shade.

May 29th: (Temp. at 7 a.m. 64°). Left our camp about 8 o'clock with 14 men to get to Batu Lawi; the others staying behind to recover from their several ailments (cold, fever, cuts, sore feet, etc.) and to do some collecting. As the summit of Selinguid rose between us, we had to make a detour round the southern slope before reaching the narrow valley which runs north and south between the two mountains. This entailed some very difficult going through pathless jungle of quite a different character to that on the other side of the mountain where our camp was situated. There we were hidden in the usual type of virgin jungle, viz. enormous high trees with interlacing branches forming a canopy far over our heads, and down below a thin growth which was not difficult to walk through. This new type of jungle on the southern and eastern slopes of Selinguid (including the summit) consisted of low-growing gnarled shrubs rarely more than ten feet high; these in turn were covered in thick moss especially round the roots which twisted and turned round and across great blocks of limestone, the whole forming one long and wearisome series of obstacles, each in itself a delightfully uncertain danger. Thus one false step and down would go one leg to unknown depths; then a slippery root would resent the unaccustomed weight of a human being and down some-body else would go through this treacherous floor. One Murut in front of me disappeared entirely just as if the ground had opened to receive him; luckily however he landed on a rock some eight feet below and came to no harm. We struggled through this down to the bottom of the ravine where a lovely mountain stream, the Palabar again, came rushing down in a south-westerly direction dividing the two mountains.

Across this and we were on Batu Lawi at last, alt. 3,740 ft.

The same kind of growth made our progress very slow for the first part up the other side; but this soon changed to the the higher kind of jungle, so we moved on quicker to a ridge on which we eventually camped a little after midday at an altitude of 4,900 ft. (temp. 65° in the shade). We passed some likely looking places for rhinoceros and at one place found some fairly fresh traces of one. The Kalabits say they are always to be found on the eastern side of Batu Lawi. Penans are said to get them with their sumpitan (blow-pipes), which seemed to me incredible considering the delicate nature of the darts they use and the thick hide of the rhino, but the Tabuns assured me that it was so and some Penans I met later confirmed it. After a short meal, a Dayak and I continued the ascent, reaching an altitude of 5,660 ft. on the southern end of Batu Lawi. Thick clouds alternating with driving rain destroyed all chances of a view and we descended again to the lancho on the ridge below.

May 30th: (7.30 a.m. temp. 64°). Ascend again this morning with some 9 or 10 natives, Penribut, Belulok and Madu among them; this time keeping along below the place where we ascended yesterday, we followed a narrow ledge of rock which brought us to a point below the gap between the two peaks. A sheer drop of some two or three hundred feet here faced us, and above us a slippery rock face with but little vegetation; two Dayaks made use of a loose root and pulled themselves up a little bit higher, but I stayed on the ledge with the others not liking to risk it in the rain which made everything so dangerously slippery. The height of the ledge was 5,660 ft. and the temperature 69° between 9 and 10 a.m. We waited there for some time hoping to get a view, but the clouds only allowed us a glimpse of the high peak towering above us—another 600 feet at most I calculated. The lower peak could certainly be climbed without difficulty from the southern end, but that sheer column—the higher peak—seemed to present a very difficult problem.

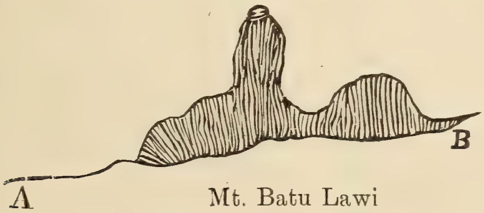
We saw tracks of some small mammals, a tiger-cat according to the natives, and I noticed but one butterfly (an Hesperid, probably *Bibasis uniformis,* Elwes), otherwise the absence of animal life was remarkable. We were certainly unfortunate in striking a particularly wet 24 hours on the mountain which partly accuonted for this dearth no doubt, but I imagine that dense humidity was the rule rather than the exception up there, so that animal life was probably not encouraged to flourish. The actual rock commences at 5,250 ft. We returned to our lancho, packed up our few belongings and made our way slowly down the hill: then up through that unpleasant tangled growth the other side and so back to our old camp on Selinguid, arriving just after dark tired out. The collectors had shot some interesting birds in our absence and captured several insects new to me.

May 31st: Climb up to the top of Selinguid again this morning and at last enjoy a splendid view of the country all round. Take some photographs of Batu Lawi [unfortunately all failures owing to lack of sufficient precautions against the excessive damp]. Butterflies plentiful on the top and we spend most of the day up there. Two Dayaks follow the ridge along the top and across a narrow ravine on the northern side and so on to the northern end of Batu Lawi. They returned at nightfall and report it much easier going than the route used by us yesterday; they succeeded in reaching the foot of the higher peak, but were unable to climb this. The top of Selinguid extends some 300 yards in a north-easterly direction, narrow and more or less flat although the growth on the top makes it difficult to move. In a secluded spot away from our butterfly-collectors I found two of our Dayaks making themselves comfortable for a pleasant morning nap; they were in the hopes of obtaining fortunate dreams, as the tops of high mountains are always said to be infested by spirits and the chances of experiencing an important dream in this hallowed spot were too good to be missed. I left them to their occupation with instructions to report if the dreams were favourable so that I might then turn them on to a little collecting which would in that case be undoubtedly profitable.

June 1st: Food has run very short and we leave about 7 a.m. on the return journey, after catching the Dayaks in an attempt at leaving with particularly light burdens. These Pandaruan Dayaks have been more trouble than use on the whole—always last and lagging, wanting to stop first, and making a fuss over the smallest hardship. The Saribas Dayaks with me are very different, cheerfully doing more than their due share of hard work. The Tabuns and Murtus give no trouble under Belulok, and the Kalabits under Penribut usually do what they are told without much persuasion. A lot depends on their headmen and I am unlucky in the head of these eleven Pandaruan Dayaks. However they are in the minority and with a few suggestive remarks at their expense we start, the baggage evenly divided. Our pace down hill is very different to that when struggling up and we get down to the Palabar and over the steep bit and down again to the Limbang again before very long. Here we find the river has risen considerably and we have to spend some time felling trees in order to bridge it. Later we pass our former camp at the junction of the two rivers Kri and then begins that long toil up the further Kri, which has also risen slightly to impede us. We reach our old camp on Mt. Derian about 6 p.m. and stragglers came in later with torches. One Dayak fell out and had to be carried in the last mile. The natives had left a little rice here on the way out and we enjoyed a much-wanted meal after a strenuous day's work. I had eaten a little at midday, but many of them had finished their food in the morning before we started and so had gone without any more till this evening. The Dayaks were accused of commandeering half the Tabuns' deposit of rice, while the latter were not looking; however they apparently had enough to satisfy their wants and I was far too tired to go into the matter.

June 2nd: (6.30 a.m. temp. 62°). Another long day's walk from Mt. Derian down to our old camp above the Rapaw stream, thus accomplishing two day's journey in one. Luckily it has been moderately fine all to-day and yesterday, except for a slight shower about 2 o'clock. But still dampness is part and parcel of travel in Borneo and the day's journey is very often commenced by fording a stream waist-high, or failing that one is soon wet through from perspiration, so that a shower or two of rain does not make much difference. I very often used to bathe just as I stood in my clothes if we came to a tempting stream or waterfall, and never seemed to derive any harm from it.

June 3rd. Soon after leaving camp this morning we came to a small opening on our right from which we can get a last sight of Batu Lawi (excepting the view of the top of the higher peak to be seen from Penribut's house). The following sketch gives an idea of it; the sloping line at the base indicating the line of the Turan-Derian range which cuts off all view of Mt. Selinguid lying between it and the lower slopes of Batu Lawi. The base of Batu Lawi (taking the Palabar stream which flows between it and Selinguid as the base line) is some 3,500 ft. above the sea-level and the mountain itself rises about 2,700 ft. higher. Approximately 1,000 ft. of the mountain are visible in the sketch.



Mt. Batu Lawi
Showing above the Derian range (A.B).

We reach the Madihit again about 11 o'clock and after a refreshing bathe and a meal proceed on to Penribut's house arriving a little after 3 p.m., most of the natives done up after the lsat three days hard walking on short commons; I too was quite glad of a rest.

They told us that Tama Belulok had returned home after staying four days longer in the house. A new report has come in to the effect that only two men of Oyau Blawing's house have died, not the whole house except five as first reported! They also report that a Dutch controlleur and his servant have been killed by one Maalin of Long Krian not far from the head-waters of the Baram.

June 4th. Spent the anniversary of King George the Third's birthday in Penribut's house settling up with the natives. The usual wage recognized by the Government in this district is 30 cents a day and it takes some time working out the amount due to each man, as so many have joined me at different dates. We have to settle up here as I am sending the Pandaruan Dayaks, the Dayak collectors and some of the Muruts back by the way we came, i.e., down the Madihit and the Limbang, while I intend going round the southern end of Mt. Molu to join the tributaries of the Baram river and so down to the Government station (Claudetown) on that river. This round has never been done before and further travelling among strange tribes will sure to prove interesting. Only Belulok, another Tabun, Madu and the cook are to accompany me with a few Kalabits to help carry our baggage.

Having no money with me, series of I. O. U's. have to be issued in the duly approved and very convenient way of the Glorious East. As a matter of fact money is of little or no use to the natives up here unless they make the journey to the coast where they can exchange it for goods of more value in their eyes, viz. beads, jars, gongs, gun-powder, etc. These chits of mine will therefore be kept till they go down river, when they will be duly honoured at the Government station. Being entirely enable to read or write, these up-river natives have a great respect for anything in the way of a printed or written note, and Mr. Ermen, the Government Officer then in charge of this district, had kindly given me two or three printed Government "surat panggil" (Government summons forms) to use in case of having difficulties in obtaining coolies. But so far I have not had occasion to use any. Belulok asked my assistance in recovering a debt of one buffalo and a quantity of rubber from a Kalabit here, who, he said, had been owing him that for some time. Of course I had no power to do anything of the sort and told him so; but he said be quite understood that and all he wanted was an all-powerful "surat"—it did'nt matter what, any scrap of paper with some writing on it would do, he said, as the Kalabit could not read (nor could he for the matter of that)—so I gave him an old envelope which bore my name and address and with this talisman he succeeded in recovering a certain amount of rubber ($20 or $30 worth) there and then! What wicked untruths he saw fit to tell about the power of the surat I did not inquire about. Some of my belongings have been left at Punbawang's house, and Lawaratu and his men go off to get it; they agree to take it straight to the Seridan river, our next objective; while another Kalabit goes off to arrange for a boat to meet us on the Seridan.

In the evening we have a little rifle practice on an old tree some hundred yards from the house. The Kalabits are much atonished at the penetration of the bullets which they carefully dig out with their parangs. A .303 rifle had been brought specially to deal with a rhinoceros, but alas to no purpose. I must hope for better luck on another expedition to this region.

June 5th. We all set out together after a cordial farewell of Penribut and his men, and then our paths soon divide, the party for Limbang keeping straight on across the end of the valley and then north to the kuala Madihit, while we turn to the left and head in a south-westerly direction for the Seridan. Eight Kalabits come with us to carry our things, of whom four are women, as we cannot get sufficient men. Lawaratu asked me if I minded women carrying my things instead of men and I said if he and his men were not ashamed to let the women do their work I did'nt mind. This was apparently rather lost on him, for they told me after it was quite customary for Kalabit women to do this sort of thing and the women rather enjoyed it than otherwise; certainly the four fat and smiling damsels who accompanied me looked cheerful enough, and they accomplished the rather tiring journey to-day without any particular sign of fatigue. That unpleasant skin disease "kurap" so prevalent among the natives here, somewhat detracted from their personal appearance.

An up and down walk brings us to the Malinau river (quite a small stream, not to be confused with the Malinau river which flows into the Tutau), alt. 920 ft. The path is so shut in by trees that we can get no view of the surrounding country at all; we cross the Lewin stream and later in the afternoon strike the Seridan river, quite a large stream. After an hour's walk through paddy farms along this river we come to a lofty bamboo brigde suspended from two huge trees overhanging the river; this leads to a fine Kalabit house built on the right bank. We learnt that most of the men had moved down river yesterday to the next house and that all the Kalabit houses of this district were sending down their annual tax to the Government station at Claudetown, so that it was an excellent opportunity for us to take passage with them. We accordingly borrowed two men and a small boat to take us down then and there, after paying off our Kalabit luggage-bearers (men and women) with the usual I. O. U. The rapids on this river are not bad and we poled down for an hour before reaching Balang Katou's house at sunset.

This Kalabit house is much larger than any we have seen on the Madihit, and is full of men this evening all gathered together from the neighbourhood for the annual trip down river. This excursion is a big undertaking and involves innumerable delays; first the head of each village has to seek good omens before he can start on the preliminary journey which is to bring him to this rendezvous. Once there, boats have to be looked out, fitted, repaired and generally re-made altogether, as they are only used on this one occasion each year (or every two years), small canoes being much handier for any short journeys between one village and another. Balang Katou's house had been unfortunate, having lost several people lately from some mysterious illness, apparently like cholera. There were three corpses in the house while I was there, each in a jar, well covered up, and standing in the room of the bereaved family. They warned me against sleeping in that house as the smell was said to be most offensive; however it was not so really, although they had been there some 20 to 30 days each, for I slept away from them in the long common verandah under the open flap of the roof, with the rest of our little party. When a Murut person of rank dies, his next of kin who acts as chief mourner may not leave the presence of the dead, and both living and dead occupy the same small room for some ten days on end. In a hot climate like this, the painful nature of this ordeal may be better imagined than described.

It is amusing to watch the Kalabit girls of the house summoning the visitors to a meal. This is prepared in the living rooms and when ready a young girl is usually sent out to call the visitors in from the long common verandah. They take not the slightest notice of her, and she stands at the door, rather a pathetic little figure, calling "kuman, kuman" ("Eat"), at first in a low rather shy tone, eventually getting louder and more impatient, as she stands awaiting the men's pleasure. After perhaps ten minutes or quarter of an hour of this by-play the men rise, stretch themselves and follow her into the room with an amusing air of protest.

The start had been delayed a month, as Balang Katou had been unable to obtain good omens up till this morning; however all was plain sailing now, so he proposes to start tomorrow and pick up another contingent a little way down river, where he will wait for me. He wants to get the majority of his up-country friends off in his two large boats, as they are not accustomed to river-work and are more trouble than use in a boat. He accordingly deputes a relation of his, one Tamarpin, to get ready a small boat and bring me down as soon as possible. Tamarpin is a fat, smooth-tongued, conceited fellow contrasting very unfavourably with all the other natives that I have met in this region—these latter always unaffected, courteous, though often blunt, and in fact true Nature's gentlemen. Tamarpin speaks Malay fluently, which I supposed he has picked up together with his Malay mannerisms, from two or three Brunei traders who often spend a month or two in a little house next door. These traders left four days ago with loads of rubber gained by trading up here.

In the evening I try to find out if they have ever heard of any other European making a visit to these parts, besides Mr. R. S. Douglas, the Resident of Baram, who visited Balang Katou's old house at the mouth of the Seridan on two occasions. These Kalabits used to live quite close to Batu Lawi, so they should know if any one did. They say they have heard of a certain "Tuan Bunga" (European collecting plants) making an expedition from Brunei some 20 years ago, and that his native collectors reached Batu Lawi, though he himself did not. I could get no information at all of this man from anyone on the Limbang or Madihit and I am inclined to think they were referring to Dr. Haviland (a keen botanist) who accompanied Mr. Ricketts up the Trusan in 1888, although in their account of that trip no mention is made of Batu Lawi at all (see p.—antea). One old Kalabit said he had heard of Sir Spenser St. John's visit to the Adangs from his grandfather and that was all I could learn from them.*

June 6th: This house is very dirty and smoky, and as usual swarming with dogs, though not so bad as Penribut's house which has quite a local reputation for discomfort. Balang Katou and his men leave at dawn. Tamarpin reports that his wife and child are ill with fever so he wants to wait three days to look for good omens on their behalf. I notice that their illness did not prevent either of them from being up and about, so I gave him some quinine and told him we would start to-morrow. Lawaratu's men arrived at the house up-river last night and a boat was sent to bring them down this morning with the remainder of my things from the Madihit.

June 7th: An early start this morning, and we paddle or pole down the Seridan river for a short distance before joining the Mago which flows in from the east. The continuation of the two rivers takes the name of the Mago, which is a comparatively broad stream, and about an hour's journey further down we come to a large Kalabit house at Long Serin. Here we are met by Balang Katou and his men, somewhat drunk but still coherent. With so many visitors in their house they were making the most of the opportunity for a little conviviality and although it was barely 9

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*In an ascent of Mt. Penrissen at the head-waters of the Sarawak River in November 1909, I spent a night in the Land-Dayak village of Sennah, which lies practically at the foot of the mountain. There the old chief in reply to my questions, said he remembered Sir Hugh Low climbing the mountain, though he himself did not accompany him, being then only a little boy; and this took place some 65 years ago (vide *Sarawak Gazettee*, 1910. pp. 5-7 "Mt. Penrissen" by the present writer). During a recent visit to Mt. Sennah some 29 miles from Kuching, I asked the old Land-Dayak "orang kaya" (chief) who had lived all his life on the hill or at the foot of it, if he remembered Wallace spending a month up there 1855-1856. But he could only remember the first Rajah going there on several occasions and that he was often accompanied by other Europeans. The Chinese rebellion in Sarawak took place a year later 1857) and memories of those exciting times had superseded his recollections of any more peaceful incidents that had taken place before.

in the morning, a large number were somewhat the worse for drink. It reminded me of a Murut house I visited two years ago in the Lawas district near Mengalong; here we found the whole house absolutely drunk at 9 in the morning; all very friendly however and insistent on our staying the rest of the day to join in the revels, and it was with none too steady legs that we managed to get away from them and proceed with our journey some two hours later. The Muruts unfortunately have a great weakness for arrack (rice-beer) and the least event is made an excuse for a drinking bout of several days, so that it is by no means rare to find a house thus occupied, when journeying in their country. It naturally has a bad effect on their physical condition and drink must be put down as the cause of many of their unpleasant characteristics, e.g. indolence, dirt, skin diseases; though from what I have seen of the Muruts of the Lawas and Limbang, I should say that those who live up-river are far cleaner, healthier and more hard-working than those who live down-river within reach of a bazaar. The same thing is very noticeable too among the Land-Dayaks of Sarawak, who, if living near civilization, i.e., a Chinese bazaar, present a miserable example of the evils of drink and gambling, in sharp contrast to their sturdy relatives who live in the hills further inland, active, lithe of limb, hard-working and cheerful.

This Kalabit house has been visited by the same strange disease and many had died from it. Tamarpin asked permission for himself and his six men to go and talk with the dead for a few minutes before we continued our journey; he said it was the Kalabit custom, and shortly after I heard a kind of mournful chant issuing from a room near by and then again from a place just outside the house. Unlike the hideous noises, one usually imagines associated with the ceremonies of barbarous races, the songs of these Kalabits seemed to be almost European in their complex—and at the same time tuneful-nature. Both this funeral chant and the drinking chorus we heard from the Kalabits at the Madihit were quite pleasant to listen to, which is more than one can say for the irritating cantations indulged in by Malays.

They wanted me to stay the night there, but I felt it necessary to push on down river to Claudetown as fast as possible in order to catch the next steamer for Kuching. There was absolutely no means of knowing when that was due and I could only trust to luck not to arrive a few hours or days after the steamer had left.

A nice little fresh in the river helped us comfortably down the rapids which are not nearly so bad as those on the Limbang; the Mago flows in a south-westerly direction down to its junction with the Tutau which we reached between 3 and 4 p.m. and then camped on the right bank of that river. This is a fine wide reach here, made all the more imposing by tall jungle lining the banks on each side. We had a refreshing bathe here and I challenged Balang Katou to a race across to the other side; he won on the outward swim and I on the return—rather to my surprise as I did not expect an up-country Kalabit to be able to swim as far, if at all; many of them could not swim at all and only ventured to bathe quite close to the bank.

June 8th: Our way now lies up the Tutau, as it is too dangerous to follow this river down a long and narrow gorge through Mt. Molu, although the Tutau runs into the Baram river further down and by going that way we should shorten the journey considerably, but I understand from the natives that it can only be done when the river is in a certain condition and then only with the most experienced river-men; to try with these up-country Kalabits is out of the question. We have to go up-river therefore and then across country to join another river which will bring us into the Tutau a little before its junction with the Baram.

An early start is made, but all the boats bring up above the first rapid and every one gets out as a matter of course. After what I thought was a sufficient interval for a rest, I suggested we might move on, but was told that Balang Katou was waiting to hear his omen bird; so we sit, as I write this, patiently waiting for this important event. Perhaps ten minutes are spent in this way before we move off again. Balang Katou told me that the natives from up-country had been in his house for one month waiting for favourable omens! After three or four more halts for evil birds which have crossed our bows or delivered a warning note on the wrong side of the river, we reach Long Mutan in the afternoon. Find several others encamped here and some dozen boats drawn up, left by other parties doing the journey to Claudetown. The Kalabits have brought a great quantity of rubber with them, with which to pay their tax to Government and exchange for bazaar luxuries; this is too much for them to carry across in one journey so they intend to stay some two or three days here carrying it across by degrees. They say it is one day's walk across to the Sidam stream, where with any luck we may find a boat. A picturesque party these natives make, some cooking on the broad pebbly flat below our hut, others drying their scanty clothes, or others bathing in the river flowing gently by; the interminable jungle in front, behind and all round, forms a pleasant frame. The natives themselves are picturesque enough from a European's point of view, long-haired and long-eared (the lobe is pierced when they are very young and the hole is gradually made larger and larger, so that the lobe is stretched down some two inches, and ornamented with heavy metal ear-rings; the top of the ear is also pierced and adorned with a large tooth, usually a tiger-cat's), Their garments consist of just a loin cloth of red or dark blue cloth, and sometimes a short coat (usually sleeveless) made of bark or fibre; without this coat, their light bronze skins, neat well-balanced figures, graceful movements, especially in poling a boat when each muscle shows in play, not in the exaggerated way exhibited by the professional Strong Man, but in that far more reasonable and proportional development intended by Nature—altogether form a very pleasant sight, and in such surroundings one sees perhaps the best phase of Man in relation to Nature.

In our large company of some 40 men there was one young Kalabit girl who, I learnt from Balang Katou, was a slave. She seemed a happy little party, rather pretty for a Kalabit, and always did her fair share of the work, paddling along in the middle of one of the boats, cooking, when we stop for the night, and later we saw her carrying a load of rubber through the jungle towards the Sidam. Several of these up-river tribes still keep slaves, and we had three or four with us on the walk to Batu Lawi, they being sent in place of their masters who had pleaded other engagements. It was some days before I knew that any of our coolies were really slaves and indeed from their treatment of one another it was quite impossible to guess which were slaves and which were not. Masters and slaves ate, slept, conversed or joked together with equal freedom; I was told that they usually become slaves owing to the death of their parents when quite young, so that they are left without anyone to look after them. If the child appears to be healthy a well-to-do native will buy him from his nearest relative and he thus becomes a slave. They do not ill-treat their slaves, for, as Belulok observed, it was'nt worth while to do so, since they would only run away and the money expended in their purchase would thus be thrown away. The system seems more on a parallel with that so common nowadays among the Chinese; for with that race, when a family is becoming too large, one of the later additions is sold to a friend to bring up as his own child, and the relationship between the child and the purchaser is probably much the same in each case. Among the Kalabits however I gathered that the slaves and their owners belonged to different classes, and that intermarriage between the two was very rare.

June 9th. Left early this morning climbing the hill at the back of our camp and followed a well-worn winding path until midday when we came to a little camp occupied by two Brunei-Malays and some Dayaks. The Dayaks were carrying gutta across for them, in this way wiping off their debts to the Malays. These Dayaks had been working gutta for several months in the Batu Lawi district and they had got as far as Balang Katou's house on the return journey. There they met the Brunei traders, to whom they sold most of their gutta; they lived a whole year in the Kalabit house, helping the Kalabits on their farms and so earning their keep, but at the same time running further and further into debt with the Bruneis, who ran a fine business among the Kalabits alone. I believe nearly all the Kalabits of that district owed the Bruneis a certain amount, and this in spite of the 40 odd pikuls of gutta that they and the Dayaks had paid the Bruneis in return for bazaar goods. The Kalabits too were working off their debts by carrying loads of gutta across to the Sidam.

After a short rest and some food we followed a narrow watercourse on through the jungle down to the head of the Sidam proper, which we found nearly dry. The Bruneis had built a little hut here and had been waiting from some 6 days to get all their gutta across. They had two small canoes and two large boats here, but could not use them yet owing to the lack of water in the stream; I persuaded them to lend me one of the small boats and intended trying to continue the journey in her to-morrow.

June 10th. A little rain last night has caused the Sidam to rise slightly, but still hardly enough to float our small canoe. Only four of us can get in,—a Brunei, Belulok, Madu and myself,—the others are going to walk across to the Melana river and wait there till we can send up a boat to fetch them from the nearest Kayan house. The first hour is spent in wading down the Sidam and dragging the boat over the rocks; the boat which is very old and rotten resents this treatment and wearily sinks at the first stretch of deep water we come to. A large piece out of the bottom is the cause and we find it is far too bad to mend, so have to leave it there and rescue the cargo, luckily very little, as we had only brought bare necessities for two nights, leaving the rest to be carried overland to the Melana. Returned to our hut at Long Teborror about 11 o'clock and discussed what was the next thing to be done. Our immediate objective was a large Kayan house on the Apoh river; once there we could be passed on from house to house down the Apoh river and eventually into the Baram River, ending at Claudetown. The only way to get to that Kayan house was to paddle down the Sidam stream and thence on down the Melana which joined the Apoh river quite close to the house; this was roughly two days' journey. Unfortunately the Sidam was too dry to float the only sound boats, so there seemed to be nothing for it but to stay and wait till sufficient rain fell to make it rise. There was a path across country to the Melana, but that did not help because there was no means of reaching or communicating with the Kayan house some 6 hours further on down river without a boat. Eventually one of the Bruneis offered to try and take his small canoe, which would just hold himself and one companion, down the Sidam and Melana to call the Kayans up to fetch us, if we would walk across to the Melana and wait for them there. The Kalabits were none too pleased over this as they thought their part of conveying my things was finished, however I had to take some of them on and we persuaded three wandering Penans to help. A little party of six of these strange people arrived in the evening, a very old couple, a young man and girl and two children; clothing as usual of the scantiest nature, the women in just a short skirt and the men with chawats (loin cloths). Their pale skins contrasted strongly with those of the brown Kalabits, Muruts and Dayaks. They seemed very shy and a little frightened at having run into such a large party. I understood from Belulok that a Penan had lately shot a Kayan with a poisoned dart and that consequently all the Penans of this district were rather fearing a wholesale revenge. However we reassured them and the old couple and the young m agreed to come with me to-morrow, not that the two former are likely to be of any use as carriers, but they are curious, never having seen a white man before, and wish to do the journey to the Melana with us; also I think the young man would not come without them. Belulok understands their language, but few of the Kalabits do. They excite a certain amount of admiration on the part of the Kalabits on account of their hard life, wandering for ever homeless in the jungle, depending on jungle produce alone for their sustenance. The wild sago palm is their chief support to which they add anything they can gain with their blow-pipe. They would'nt come up into our huts but stood quietly outside in the rain, with their loads on their backs, making arrangements for to-morrow. I served out cigarettes and biscuits which were received with a slow smile of thanks. The phrase "Thank you," by the way, seems unknown among all Sarawak natives, and any gift or service is always received in silence, but this by no means implies rudeness or ingratitude, although it looks so like it to a European. In spite of the rain and approach of night our nomad friends refused to share our huts and moved off into the jungle to some favoured spot of their own, promising to be with us again for an early start to-morrow morning.

Among our Kalabit bearers is a well-built young man, the slave of one of the up-river chiefs. Unhappily he is both deaf and dumb, but in spite of this terrible infliction seems wonderfully quick to understand and make himself understood. His friends always seemed sympathetically attentive to his wants, although he was well able to look after himself.

June 11th. We take leave of the Bruneis and set off across the Sidam under the leadership of a fat Kalabit, one Metaribu, a pleasant, though somewhat happy-go-lucky, casual gentleman, who says he thinks he knows the way having done the journey once before some three years ago. The others do not seem to think anything of trusting themselves to his guidance, though I express my doubts as to his ability to remember it after such a long time. Belulok laughs scornfully, "of course he knows the path, if he has been along it once;" and somehow Metaribu brings us through, now along a winding pig-track, now down some dried water-course, up another, across a succession of short steep hills, across one stream and down another, in and out of a maze of jungle and eventually late in the evening down to the banks of the Melana. As its name implies it was the blackest river we have come across so far, in great contrast to the beautiful clear waters of the mountain streams we passed from the Madihit to Batu Lawi. I asked Belulok if he knew the meaning of the name Melana, but he did not know nor was he able to give me a clue to the native Professor of Greek who (presumably) had named it thus. We passed several shelters used by other Penans evidently quite recently, we all enjoyed a refreshing bathe in the black waters of the Melana, except the Penans, who, true to Belulok's description of them some weeks ago, never washed except in the rain. Built our lanchos on the left bank and slept the sleep of the just after a tiring day's walk, undisturbed by countless sandflies and mosquitoes.

June 12th. After an early breakfast we continue the walk with the idea of cutting across two large bends of the river and joining it again some way lower down at a place called kuala Leppu Penyu. A little over two hours walk sufficed to bring us to that point and we sat down on a pebbly beach by the river side to wait for the Kayans fetched by the two Bruneis. The Penans want to return so I pay them off with three fathoms of black cloth (enough for one chawat), 4 cigarettes each and some salt. My stock of tobacco ran out some days ago. The young Penan showed us how to use the sumpitan (blow-pipe), kneeling on one knee and slightly leaning forward as he shot at some flowers in a tree some height above us. He had some 400 thin rotan rings on his legs and arms, many ornamented with three or four small beads. He gave me 5 as a keepsake; then they set off, after mutual expressions of friendship and goodwill duly interpreted by Belulok, and quickly disappeared into the depths of their jungle home.

The sun steadily rose and in spite of a refreshing bathe in the river it became excessively hot sitting waiting on the bank. I watched with interest some of our Kalabits squatting on the ground busily engaged in going over one another's heads for fleas! Very like monkeys in this work, although they kept their mouths still instead of exercising them in the chattering- movement of monkeys. Any 'game' collected was solemnly handed over to the owner of the 'preserve,' who promptly bit it but did not swallow it. I chaffed Belulok on being found to be the owner of four. He laughed, and asked what could one expect after living in Kalabit houses like we had on and off for the last ten days ? ! Certainly I could'nt blame him, having pleasant memories myself of those nights in Penribut's house, with rats gnawing at one's feet, dogs and fowls crawling over one, not to mention a continual irritation from bugs and fleas!

After an hour or so we were rejoiced to see a small boat being poled up to meet us by three men; they turned out to be Kayans coming up to fish, and they reported having passed the Bruneis a little way lower down, so we mush have reached this place only just after the Bruneis had passed. We begged some tobacco off these three first, and then sent them off to fetch their companions, some of whom were fishing a little way off, while two others were hunting deer with the assistance of a small pack of pariahs. About one o'clock they arrived with two more small canoes and we squeezed our little party in and paddled on gently down the Melana, occasionally stopping to pull the boats over a small rapid. Some four hours later we reached the Apoh river and landed at a long Kayan house on the left bank of the Apoh, a shot distance above the entrance to the Melana. We are cordially welcomed by the chief, a fine broad-chested Kayan, Buoy Won by name, who leads us up to a Chinaman's house close by, apologizing profusely for not being able to receive us properly as his own house is *pantang* (taboo) owing to the planting season. He tells me that I was extremely lucky to fall in with his men up-river to-day as this is the first day for a month that they have been allowed out, the taboo being nearly over. We ask the Chinaman if he has heard of any steamer coming to Claudetown and he tells us one arrived twelve days ago and that they were expecting another in three or four days time, so with any luck we ought to just get down in time to catch it.

Mt. Molu lies to the north-east of us and we had a fine view of it across a comparatively flat piece of country, stretching away at the back of the Chinaman's house. This is the first time we have had any view at all since leaving Penribut's house; the jungle invariably preventing all possibility of seeing any distance, although the lower part of the Melana showed more open country with mud banks along the water's edge instead of rocks and narrow gorges.

Buoy Won explained how it was impossible for him to supply me with boat and crew for the journey on down river to-morrow owing to his house being *pantang,* but that he would be very pleased to do so if I would'nt mind waiting two more days, so that he could spend one looking for an omen and another day to wait after having obtained it (as that was their custom), and then we could start on the third. However I thought that delay would probably make us miss the steamer, so we decided to send for a crew from another long house an hour or two down-river. Belulok, the chief of these people—a Sebop tribe, Long Watts, as they are called, arrived a little after midnight in pouring rain; and Buoy Won came in too; most of my party had been asleep for some time, but we got up and dispensed gin and tobacco, and then discussed the important question of getting off to-morrow; apparently the Long Watts had a small taboo on too, however Buoy Won, anxious to get rid of me, emphasized my importance as a Government official and explained how necessary it was to help me in any way possible, so we at last turned in again about 2 a.m., the Long Watts having promised to have a boat and crew ready if Buoy Won's people would paddle me down to their house at daylight.

Mr. Douglas, the resident in charge of this large district, makes it clearly understood that anything to do with Government has to be attended to promptly, regardless of dreams, omens or taboos; although, as Buoy Won told me, he always takes care to ask if such and such a date and month will suit the natives, before arranging any big expedition which would require a lot of men. In this way, letters, verbal messages, or single travellers like myself with but five natives, get passed on from house to house like hot cakes.
passed on from house to house like hot cakes.

June 13th. Buoy Won insisted on supplying us with rice for our journey, obtaining it from the Chinaman whom he promised to pay later. Although he had plenty in his own house, the taboo did not allow him to give us any, nor for the same reason could I or any other stranger go up into his house. This by the way was an exceptionally long one, consisting of some ninety doors built some thirty yards back from the bank of the river. Large wooden tiles were used for the roof and the large solid bilian posts supporting the house were of a very different nature to the flimsy structures made by the Kalabits on the Madihit.

An hour's paddling brought us to Belulok's house and I went up to talk to him while they were preparing the boat. This is another long house built on the same solid lines as Buoy Won's. Belulok asked one of our party for some small present which as far as I could understand, he wanted as a kind of propitiatory offering for having caused the Long Watts to break through their taboo. He said it did not matter what form the offering took, only it must not be broken or damaged in any way; so one of my party offered a parang which seemed to meet the requirements of the case all right. The old chief apologized courteously for having asked for it, but explained that it was their custom under the circumstances, and the natives with me seemed to regard it as a natural request. We started off after a short delay, in their best racing boat, a fine long boat some 70 feet long with 18 Long Watts for a crew. When we were in, baggage and all, there was a bare inch of free board, but she was beautifully steady and the long gliding motion as they steadily paddled us down the Apoh was delightful. We stopped about one o'clock for a meal on the bank, and then continued till dark. We had to stop then, as it was too dangerous to try and shoot the rapids in the dark, although there were none very bad to pass. About nine the moon rose over the tree-tops by the water's edge and we were soon on the move again, reaching a long house at Batu Bla just at break of day. We are now in the Tutau river again, which, it may be remembered, is the same river that we ascended behind Mt. Molu up to Long Mutan.

June 14th. Most of the inhabitants of this long house were away and it was with some difficulty that the chief managed to get a boat for us to continue the journey. Our friends the Long Watts began the return journey up-river after resting an hour or so only. We had taken eighteen hours to come down and they expected to get back in two nights.

We spent a tedious day being passed on from house to house, doing an hour's journey with some Long Kiputs, then another stretch of two or three hours in a Bukit boat. By nightfall we had reached the main Baram river and later passed the mouth of the Tinjar river.

June 15th. 2.30 a.m. we draw up alongside the wharf of Claudetown; our first thought is for the steamer from Kuching, has she come and gone, or not yet arrived? We are told that it is all right, the last one left a fortnight ago and they are expecting another in any day now. After a few hours sleep in the Fort I pay an early call on Mr. H. S. B. Johnson, the Acting Resident in charge of the station and realize the pleasure of meeting a European once more and talking English again after forty days wandering. with natives only for companions. The ordinary common-places of civilization all appear unusually attractive; sitting on a *chair* to a meal laid out on a *table*! Having a *bed* to sleep in! *Vegetables, bread, butter,* etc., to eat!! European papers to read—true they are six weeks old, but still new to me! It is quite curious to feel such appreciation for what one is accustomed to regard more or less as the necessities of life.

July 13th. After a pleasant, peaceful four weeks spent here enjoying the kind hospitality of Mr. Johnson, the daily expected steamer has at last arrived and we are to sail for Kuching to-morrow.

July 14th. Left at 11 a.m. and reached the mouth of the Baram river that evening; there is rather a swell on outside and it is doubtful whether we can get over the bar to-morrow; we go ashore and enjoy a refreshing bathe in the sea, then climb to the top of the light-house in time to watch a magnificent sunset.

July 15th. Too rough to get out at high tide this morning, so we have to put off all hopes of leaving till to-morrow. The bar of this river is particularly shallow, so that during the north-east monsoon no steamer can get in at all; even in the fine months of the year the steamers often have to wait for several days before getting in or out; once a whole month was spent by a steamer waiting patiently outside for a calm day to get in to the river!

July 16th. Safely over the bar this morning, and the sea nice and calm, promising a fair passage to Kuching which we should reach in 36 hours.

July 17th. Arrived in Kuching shortly after midday after an absence of two months and a half. The collectors had arrived from Limbang some ten days before. They had had a quick passage down the Limbang and had been able to spend five days collecting at the kuala Salindong. Then they had finished the journey on down to the Government station at Limbang and after a week's wait there had caught a steamer for Kuching arriving some ten days before us.

CONCLUDING NOTE.

Perhaps a word of apology for the length of my narrative is due to the reader who has had the patience to follow me thus far, since after all, the journey described was certainly of less interest than many others of a similar nature accomplished every year by Europeans among uncivilized tribes in various parts of the world, and the necessary details could no doubt have been confined to a tenth part of the space now occupied by my narrative. I have not tried to condense it this manner for two reasons principally:—(i) because I believe that the only way in which our knowledge of strange natives and their ways of life can be materially increased is by the constant publication of a large number of apparently trifling observations collected by men who have spent many years among natives, by men who know their language, their customs to a certain extent, and more important, by men who know the natives sufficiently well to be able to attach a fairly correct value to information received from them. And here let me at once hasten to deny all claim for myself to be in such a position so that my observations on native life are of any real importance. My excuse for appearing to take up that position is that this Journal is probably read by men in the East more than by men in Europe, and my article will more than serve its purpose, if, after reading the small details of interest I have recorded, men of long experience in the East can be induced to publish the trustworthy records of their own travels and observations, which are of such infinitely higher value than the "experiences" published year by year by hurrying globe-trotters, for whom a week in one country is found sufficient to enable them to write a book thereon. (ii) The details of places and native houses, I have hoped will some day be of interest to others who may make a journey to that region. Sir Spenser St. John's book, which I carried with me, consulting it nearly every day I found most useful and interesting for that purpose. His map was particularly useful and trustworthy; I regret that mine, based on very limited observations, is no more than a very rough 'sketch map,' only difficult to indicate the journey accomplished.

The collections made were regrettably small, although in spite of that, surprisingly rich in new and rare species, which clearly indicates the interesting and little known nature of the fauna and flora of that region. The hurried character of the expedition may be understood by the following brief summary, which explains the lack of opportunity for any steady collecting. In the 40 days' journey from the Government station at Limbang to the Government station of Baram (Claudetown) 31 were spent in actual travelling; or to put it another way, we slept two consecutive nights in the same place on five occasions and once for three consecutive nights. The river journey occupied 10 days (excluding a day spent at the kuala Madalam and another at the kuala Madihit), the walk in the mountainous region occupied 12 days excluding three days spent at Penribut's house, one on Mt. Derian and one on Mt. Selinguid. My return journey to Baram took 4 days to walk and 5 days in boats.

Unfortunately the Madihit district is very sparsely populated and for that reason we were unable to procure enough coolies to carry provisions sufficient for any length of time; between the Madihit (Penribut's house) and Batu Lawi there are no natives and we were away 13 days without seeing anyone except the members of our party. Again from the Murut house just above the kuala Madalam up to the kuala Madihit, there are also no houses and we were travelling the best part of four days without meeting anyone. On the return journey there was a similar large gap between the Mago and the Apoh rivers (5 days' journey) without any native habitations, except the temporary shelters occupied by the nomad Penans. If the district had been more populous it would have been possible to arrange for relays of coolies to follow us to Batu Lawi every week or so with fresh provisions, but as it was, the small Kalabit houses in the Madihit were barely sufficient to provide us with carriers for the bare journey to Batu Lawi and back.

The general health of the expedition was by no means good. In the mountainous region, the natives in their scanty clothing felt the cold considerably although they used to keep fires going all night; but this availed little in the continual dampness. Many developed fever and bad colds, while I had to treat stomach disorders, cuts and bruises very frequently. The shortage of food on the return journey was a further hardship. Nevertheless they bore their troubles well and usually managed to raise a laugh at some enlivening sally from poor, ever-cheerful Madu, my much regretted Land-Dayak boy. I was fortunate enough to keep in excellent health the whole time and thoroughly enjoyed the invigorating mountain air.

I must not conclude without a word of recognition of one of the pleasantest and at the same time most instructive features of the whole expedition; that was the invariable welcome and courteous hospitality always extended to us at every house; and reflecting on the diversity of tribes we met, viz.—Bruneis, Bisayas, Dayaks, Tabuns, Adangs, Kalabits, Penans, Kayans, Long Watts, Long Kiputs and Bukits, not forgetting some Chinese traders—it speaks much for the wide-spread nature of good feeling among the natives of those districts towards the white man's rule in Sarawak. Long may it remain so!

APPENDIX I.

Some Plants Collected on Mr. Moulton's expedition to Batu Lawi.

By H. N. Ridley, C.M.G., F.R.S., ETC.

The little collection sent by Mr. Moulton contains some plants of considerable interest. Notably perhaps the *Rhododendrons*. Borneo appears to be quite rich in these beautiful plants, of which the collection contains no less than seven; of these one is a Kinabalu, species, *R. cuneifolium,* Stapf., and another is not distinguishable from *R. jasminiflorum,* Stapf., of the Malay Peninsula. The connection of this flora with that of Mt. Kinabalu is further evidenced by the presence of *Pentaphragma aurantiaca,* Stapf., previously only known also from that mountain. The remainder of the plants are typical mountain species of Borneo, except *Bauhinia Finlaysoniana,* Grah., a rather rare Malay Peninsula species.

MELIACEAE.

1. *Aglaia laxiflora,* Miq. Salindong, Ulu Limbang. 10.6.11.

LEGUMINOSAE.

2. *Bauhinia Finlaysoniana,* Grah. Salindong, Ulu Limbang. 10.6.11.

MELASTOMACEAE.

3. *Anerincleistus* (*Allomorphia*) *cordatus,* (Stapf.). Batu Lawi,* Ulu Limbang. 28.5.11.

4. *Sonerila nodulosa,* n. sp. Batu Lawi, Ulu Limbang. May, 1911.

Stem woody, branched, dark brown with short protuberances from which the leaves have sprung. Whole plant 6 inches tall, leaves at the ends of the branches crowded, small, ovate, lanceolate, narrowed at the base and apex, herbaceous, glabrous, strongly spinulose, dentate, half an inch long, a quarter of an inch wide, petiole slender, $\frac{1}{8}$ inch long. Flowers small in terminal cymes, in smooth peduncles an inch long. Bracts persistent setaceous. Calyx narrow funnel-shaped with 5 short lanceolate acuminate lobes, $\frac{1}{8}$ inch long. Petals lanceolate acute pink. Stamens filaments slender, anthers narrow oblong elliptic, not beaked yellow. Capsules on pedicels $\frac{1}{4}$ inch long, top $\frac{1}{4}$ inch wide, broadly funnel-shaped smooth polished with broad valves. Perhaps nearest to *S. tenuifolia,* Bl., but woody and remarkable for the curious articulations of the leaves, from which a rib runs down on each side to the next node.

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*Plants so labelled were not necessarily taken on Batu Lawi, but in some cases on Mt. Selinguid, or on the journey between the two mountains which are divided by a narrow valley.

RUBIACEAE.

5. *Lucinaea montana,* Korth. Batu Lawi, Ulu Limbang. 28.5.11.

COMPOSITAE.

6. *Vernonia arborea,* Ham. Batu Lawi, Ulu Limbang. 28.5.11.

CAMPANULACEAE.

7. *Pentaphragma aurantiaca,* Stapf. Batu Lawi, Ulu Limbang. 28.5.11.

ERICACEAE.

8. *Rhododendron jasminiflorum,* Hook. Batu Lawi, Ulu Limbang. 29.5.11.

9. *Rhododendron lanceolatum,* n. sp. Batu Lawi, Ulu Limbang. 29.5.11.

Shrub, bark brown, leaves lanceolate acuminate acute subsessile, base rounded above smooth shining, nerves 8 or more, pairs slender, invisible beneath, beneath paler closely dotted, midrib narrow rounded elevate slightly, beneath broader, dilate at base on the upper surface. 3 inches long 1¼ inch wide, petiole very short and scurfy. Flowers 5 or more in a head much shorter than the leaves, with numerous lanceolate acuminate bracts as long or little longer than the pedicels. Pedicels woolly pubescent ½ inch long. Flowers campanulate ¾ inch long. Calyx distinctly lobed with short blunt lobes pubescent. Corolla campanulate with rounded lobes shortly pointed ⅝ inch long ¾ inch wide white? Stamens short ¼ inch long, filaments long-woolly at base glabrescent above, anthers half as long cylindric curved at the tip blunt at both ends. Pistil conic woolly, style short woolly at the base, glabrous at the tip, stigma capitate. A pretty small flowered species with scurfy young parts.

10. *Rhododendron orbiculatum,* n. sp. Batu Lawi, Ulu Limbang, 5700 ft. 28.5.11.

Woody epiphyte over 2 feet tall, stem flexuous, internodes an inch long. Leaves in opposite pairs stiffly coriaceous, almost sessile orbicular or elliptic rounded at both ends midrib deeply sunk above, nerves not very conspicuous 5 or 6 pairs. 1 inch long 2 inches wide. Flowers 4 or 5 in a sessile terminal corymb pedicels ¼ inch long pubescent. Calyx very small saucer-shaped. Corolla tube cylindric glabrous 1¼ inch long, lobes 1 inch long rounded, half an inch wide. Filaments slender half as long as the lobes, anthers oblong truncate slightly narrowed and rounded at the base. Ovary cylindric narrowed at the tip $\frac{1}{4}$ inch long, style $1\frac{1}{2}$ inch long all pubescent stigma subglobose lobed. Allied to *R. jasminiflorum,* Hook. fil. but with larger corolla and orbicular leaves.

11. *Rhododendron crassinervium,* n. sp. Batu Lawi; Mt. Derian, Ulu Limbang. 5.11.

Shrub, branches black, leaves coriaceous elliptic, or oblanceolate blunt narrowed to the base, but base rounded, midrib very broad at the base narrowing rapidly upwards, side nerves primary and secondary nearly as conspicuous slender 15-16 pairs, reticulations visible, 6 inches long $2\frac{1}{4}$-$2\frac{3}{4}$ inch wide, corymb of about 50 flowers on a short thick cone shaped peduncle $\frac{1}{4}$ inch long. Pedicels 2 inches long. Calyx flat saucer-shaped. Corolla 1 inch long and nearly as wide, tube very short $\frac{1}{4}$ inch long, cylindric, lobes broad rounded, stamens short, anthers oblong opening by two large pores, blunt at both ends. Pistil ellipsoid narrowed at the tip glabrous $\frac{1}{8}$ inch long. Style as long with 5 stigmatic lobes. Flower red.

12. *Rhododendron durionifolium,* Becc. Batu Lawi, Ulu Limbang. 28.5.11.

13. *Rhododendron cuneifolium,* Stapf. Batu Lawi, Ulu Limbang. 29.5.11.

14. *Rhododendron Moultonii,* n. sp. Mt. Derian, alt. 4-5000 ft. May 1911.

Shrub, bark grey, leaves elliptic shortly acuminate subcoriaceous, narrowed towards the base and then rounded obtuse, midrib stout elevate beneath rounded, above depressed, nerves 16 pairs conspicuous interarching within the edge 7 inches long 3 inches wide, petiole thick $\frac{1}{4}$ inch long. Flowers very numerous in a large head on a short thick peduncle $\frac{1}{8}$ inch long. Pedicels $\frac{1}{2}$ inch long. Calyx short obscurely lobed, corolla yellow, tube short cylindric $\frac{1}{4}$ inch long lobes $1\frac{1}{2}$ inch long subacute. Stamens filaments pubescent, anthers long curved cylindric nearly $\frac{1}{4}$ inch long, with 2 conspicuous terminal pores. Pistil cylindric $\frac{1}{6}$ inch glabrous style long $\frac{1}{2}$ inch. Stigma capitate clubbed. After the style of *R. Teysmanni* but with quite different leaves.

MYRSINEAE.

15. *Embelia buxifolia,* n. sp. Batu Lawi, Ulu Limbang. 28.5.11.

Shrub, bark black, young parts apparently glutinous. Leaves thickly coriaceous elliptic narrowed at the base $\frac{1}{4}$ inch long $\frac{1}{8}$ inch wide, apex rounded, nerves invisible above shining, petiole minute $\frac{1}{10}$ inch long. Raceme of 5 or 6 flowers on fewer $\frac{1}{4}$ inch long, scurfy. Flowers minute on pedicels $\frac{1}{20}$ inch long, calyx lobes 4 suborbicular crenate on the edge very obscurely. Corolla tube very short, lobes much longer oblong truncate 4. Stamens with slender filaments on the tube, anthers elliptic. Pistil glabrous. Allied to *E. minutifolia,* Stapf. of Kinabalu but wtih entire not ovate leaves.

SOLANACEAE.

16. *Nicotiana tabacum,* Linn. Ulu Limbang. 5.11.

NEPENTHACEAE.

17. *Nepenthes Rafflesiana,* Jack. Batu Lawi, Ulu Limbang. 29.5.11.

18. *Nepenthes Reinwardtiana,* Miq. Batu Lawi, Ulu Limbang. 29.5.11.

19. *Nepenthes Lowii,* Hook. fil. Batu Lawi, Ulu Limbang. 28.5.11.

CONIFERAE.

20. *Phyllocladus hypsophylla,* Hook. fil. Batu Lawi, Ulu Limbang. 28.5.11.
21. *Dacrydium beccari,* Pilg. Batu Lawi, Ulu Limbang. 28.5.11.
22. *Podocarpus imbricata,* Bl. Batu Lawi, Ulu Limbang. 28.5.11.

SCITAMINEAE.

23. *Globba atrosanguinea,* Teysm. Batu Lawi, Ulu Limbang. 29.5.11.
24. *Hedychium,* sp. Batu Lawi, Ulu Limbang. 28.5.11.
25. *Burbidgea schizocheila,* Hook. fil. Batu Lawi, Ulu Limbang. 28.5.11.
26. *Burbidgea nitida,* Hook. fil. Mt. Derian, Ulu Limbang. 5.11.
27. *Burbidgea nitida.* Batu Lawi, Ulu Limbang. 29.5.11.

LILIACEAE.

28. *Dianella,* sp. Batu Lawi, Ulu Limbang. 28.5.11.

MUSCI.

29. *Pogonatum macrophyllum.* Mt. Derian, Ulu Limbang. 5.11.

LICHENES.

30. *Collemacea.* Batu Lawi, Ulu Limbang. 29.5.11.
31. *Cladina rangiferina,* Nyl. Batu Lawi, Ulu Limbang. 28.5.11.

APPENDIX II.

Orchids collected on Mr. Moulton's expedition to Mt. Batu Lawi.

By Dr. J. J. Smith, Buitenzorg.

Since Ridley published his enumeration of the *Orchideae* from Borneo, many new species have been described and several others only known from other parts of the Malayan region, have been added to its flora, but a somewhat satisfactory survey of the Orchid flora of the large island is still lacking. Every addition is to be regarded as a step forward.

The small but interesting collection made by Mr. J. C. Moulton on Mt. Batu Lawi consists of 18 numbers representing 17 species. It is to be regretted, that in no less than 7 species the flowers are in no state good enough to be described. Among the remainder, 7 well marked new species were found.

The genus *Eria* represents the bulk of the collection, containing 7 species of which 3 belong to the small section *Aeridostachya.*

The plant I take to be *Eria cymbidiifolia,* Ridl., has elongate, 15-20 cm. long, 3-4 leaved stems. The leaves are obliquely subacute or subobtuse, where as Ridley describes them as bilobed. In the flowers too the description does not entirely suit Mr. Moulton's plant. It is nearly related to *E. cymbiformis,* J. J. S., from Sumatra, which has, as a plant cultivated in the Buitenzorg Botanical gardens shows, very short 8-10 leaved stems and pubescent inflorescences and flowers. It belongs to the section *Cymboglossum,* as I think does *E. longifolia,* Hook. f., *E. lawiensis,* J. J. S., is a very inconspicuous plant of the *Trichotosia* section.

Coelogyne is represented by 3 species, of which one without flowers. *C. Moultonii,* J. J. S., with very large bracts seems to be the most showy plant of the collection and is allied to *C. Dayana,* Rchb. f., *C. gibbifera,* J. J. S., is a member of the *Longifoliae* section.

The two *Dendrobes* are both allied to *D. crumenatum,* Swartz, with very fugaceous flowers. *D. lawiense,* J. J. S., is well marked by the elongate lip.

It is rather remarkable, that the two species of *Dendrochilum* belong to the very few representatives of the section *Platyclinis* with an elongate rhizome.

The *Phajus* is very similar to *Ph. callosus,* Lndl., hitherto not yet recorded from Borneo. The lip is however more cuneate as in the Javanese specimens and the midlobe smaller. Perhaps it is another species.

List of Species.

1. Eria (Sect. Aeridostachya) sp.
2. Eria (Sect. Hymeneria) sp.
3. Eria (Sect. Aeridostachya) sp.

4. Eria (Sect. cymboglossum) cymbidiifolia, Ridl.
5. Eria sp.
6. Eria (Sect. Aeridostachya) ovilis, J. J. S.
7. Dendrobium (Sect. Crumenata) fugax, Schltr.
8, 9. Dendrobium (Sect. Crumenata) lawiense, J. J. S., n. sp.
10. Dendrochilum (Sect. Platyclinis) remotum, J. J. S., n. sp.
11. Coelogyne sp.
12. Coelogyne (Sect. Longifoliae) gibbifera, J. J. S., n. sp.
13. Appendicula sp.
14. Eria (Sect. Trichotosia) lawiensis, J. J. S., n. sp.
15. Dendrochilum (Sect.Platyclinis) longipes, J. J .S., n. sp.
16. Bulbophyllum (Sect. Intervallata) sp.
17. Coelogyne (Sect. Tomentosae) Moultonii, J. J. S.
18. Phajus callosus, Lndl. var. or perhaps a new species (at foot of Batu Lawi, Sungei Palabar).

Descriptions of the new species have been published in the "Bulletin du Jardin Botanique de Buitenzorg," (Deuxième Série No. III. Feb. 1912), and by kind permission of the Director of that institution are reprinted here together with a few notes translated from the German.

Coelogyne gibbifera, J. J. S., n. sp.

Rhizoma repens, validum, teres, c. 0.625 cm. crassum, initio vaginatum, internodiis abbreviatis. Pseudobulbi c. 0.9 cm. distantes, erecti, elongati, supra basin leviter fusiformi-incrassati, apicem versus sensim attenuati, c. 12.7-13.7 cm. longi, in sicco 0.6-0.65 cm. diam, lfolii. Folium petiolatum, lanceolatum, acuminatum, nervis majoribus c. 6-7, in sicco tenuiter coriaceum, c. 18.5-21 cm. longum, 4.3-4.6 cm. latum; petiolus canaliculatus, c. 0.6-1.5 cm. longus. Inflorescentia synantha, erecta, folio brevior, pedunculo tenui apice incrassato c. 8-10 cm. longo, rachide incrassata flexuosa ad c. 4.5 cm. longa, succedanee ad c. 12 flores gignente, internodiis c. 0.4-0.5 cm. longis. Bracteae alternatim bifariae, caducae. Flores majusculi, c. 4.8 cm. longi (macerati). Sepalum dorsale erectum, lanceolatum, anguste obtusum, 7(-9) nervium, costa media dorso prominente, c. 3.5 cm. longum, 1 cm. latum. Sepala lateralia deflexa, apice revoluta, oblique lanceolata, angulato-falcata, obtusiuscula, apiculata, undulata, carinata, supra basin c. 7(-9) nervia, c. 2.75 cm. longa, 0.73 cm. lata. Petala reflexa, linearia, 3 nervia, supra basin c. 0.17 cm. longa (basis tantum adest). Labellum basi lata sacculata insertum, 3 lobum, 3 nervium, 3 constatum, costis basin excavatam haud attingentibus, lateralibus ibi in lobulum parvum reversum productis, omnibus rectis simplicibus glabris in

ungue lobi intermedii humilioribus et in lamina evanescentibus, expansum c. 2.55 cm. longum, hypochylio suborbiculari carnosulo c. 1 cm. longo 0.875 cm. lato; lobi laterales erecti, semiorbiculares, antice haud producti; lobus intermedius magnus, porrectus, apice revolutus, unguiculatus, ungue subcuneato-oblongo c. 0.475 cm. longo basi 0.25 cm. apice 0.375 cm. lato, lamina ⅔ orbiculari-convexa abrupte brevissime obtuse acuminata c. 1 cm. longo 1.1 cm. lata. Gynostemium gracile, curvatum, apicem versus subclavatum, exalatum, apice obtusum, sectione transversa triangulum, subtus supra basin bene prominentem dente porrecto transverso a dorso compresso late triangulo obtuso donatum, c. 1.35 cm. longum, clinandrio concavo. Rostellum magnum, semiorbiculare, convexum. Stigma suborbiculare, concavum. Ovarium pedicellatum sigmoideum, tortum, 6 costatum, c. 1 cm. longum.

Borneo: Sarawak, on Mt. Batu Lawi, Ulu Limbang, (J. C. Moulton n. 12, fl. in May 1911). This species belongs to the section *Longifoliae,* as this was limited by Pfitzer. It is remarkable for the unequally long sepals, the large strongly clawed midlobe of the lip and the column which bears a tooth a little above the base. The plant is allied to *C. vermicularis.* J. J. S.

Coelogyne Moultonii, J. J. S., n. sp.

Pseudobulbi satis approximati validi, elongati, c. 23 cm. longi, 2 folii. Folia petiolata, lanceolata, nervis c. 7 subtus prominentibus, c. 42 cm. longa, 6.75 cm. lata; petiolus canaliculatus, costatus, c. 7 cm. longus. Inflorescentia proterantha, elongata, pendula, laxe multiflora, pedunculo c. 9 cm. longo, rachide nigro-furfuraceo-puberula c. 35 cm. longa. Bracteae alternatim bifariae, magnae, persistentes, orbiculari-ovatae, rotundatae, concavae, multinerviae, dorso minute nigro-furfuraceo-punctatae, c. 2.2-2.6 cm. longae, 2-2.2 cm. latae. Flores mediocres, sepalis praesertim basin versus nigro-furfuraceo-punctatis. Sepalum dorsale oblongum, apicem versus angustatum, anguste obtusum, concavum, c. 5 nervium, nervo intermedio dorso prominente, c. 1.65 cm. longum, 0.625 cm. latum. Sepala lateralia oblique subovato-oblonga, subacuta, concava, carinata, 6 nervia, c. 1.7 cm. longa, 0.3 cm. lata. Labellum concavum, 3 lobum, basi saccato-depressum, 6 costatum, costis omnibus ad medium lobi intermedii productis, basi et praesertim apice simplici plus minusve lacinulato excepto duplcatis crenulatisque, costis 2 interioribus longissimis usque ad basin labelli productis ibi humilibus integrisque, 2 sequentibus in ¼ supra basin evanescentibus, 2 exterioribus brevissimis vix infra basin lobi intermedii productis, costa media haud incrassata, expansum ambitu oblongum, c. 1.6 cm. longum, 1 cm. latum, hypochylio quadrangulo in lobos laterales leviter dilatato medio c. 0.85 cm. lato; lobi laterales erecti, antice brevissime disjuncti, rotundati, crenulati, gynostemio paulo breviores; lobus intermedius transverse rotundato-quadrangulus, apice breviter rotundato-bilobus cum lobulo parvo rotundato in sinu, crenulatus, c. 0.5 cm. longus, 0.675 cm. latus. Gynostemium superne curvatum, in $\frac{1}{3}$ supra basin abrupte latissime alatum, cucullato-concavum, ala apicali vix recurva trapeziformi truncata crenata, c. 1.17 cm. longum, expansum 0.67 cm. latum. Anthera abscondita, cucullata, transversa, breviter ovata, connectivo basi conico-incrassato, c. 0.23 cm. lata. Rostellum recurvum, semiorbiculari-ovatum. Stigma parvum, margine inferiore producto recurvo rotundato. Ovarium pedicellatum clavatum, sigmoideum, 6 sulcatum, nigro-furfuraceo-puberulum, c. 0.87 cm. ovarium c. 0.45 cm. longum.

Borneo: Sarawak, on Mt. Derian, Ulu Limbang, alt. circ. 4,500 ft. (J. C. Moulton, n. 17, fl. in May 1911). This species is allied to *C. Dayana*, Rchb. f., of which it has the habit. It is characterised by the very large bracts, which are but little shorter as the relatively small flowers, the lip, which has short sidelobes and a shortly bilobed midlobe and bears 6 keels, of which the outer ones are the shortest, and a broadly winged column.

Dendrochilum longipes, J. J. S., n. sp.

Rhizoma elongatum, validum, radicans, teres, in sicco c. 0.3-0.325 cm. diam., vaginis tubulosis. Pseudobulbi c. 3-6.5 cm. inter se distantes, elongati, cauliformes, in sicco rhizomate tenuiores, c. 6.5-9 cm. longi, 1folii. Folium lanceolatum, acutum, basi petiolato-contractum, c. 9 nervium, coriaceum, c. 6.5-11 cm. longum, 1.35-2.25 cm. latum; petiolus canaliculatus, c. 0.4-0.9 cm. longus. Inflorescentia cum folio plane evoluto synantha, elonga, stricta, multiflora, c. 33-39 cm. longa, pedunculo superne bracteis c. 2 satis remotis adpressis obtusis sterilibus c. 0.3-0.325 cm. longis donato, rachide quadrangula c. 18-21 cm. longa, internodiis c. 0.2-0.325 cm. longis. Bracteae alternatim bifariae, patentes, suborbiculares, basi latae, marginibus involutae, erosae, 3 nerviae, c. 0.3 cm. longae, 0.275 cm. latae. Flores parvi, valde aperti, c. 0.53 cm. lati. Sepalum dorsale ovato-oblongum, breviter acuminata, concava, subcarinata, 3 nervia, c. 0.375 cm. longum, 0.15 cm. latum. Sepala lateralia oblique ovato-oblonga, breviter acuminata, concava, subcarinata, 3 nervia c. 0.36 cm. longa, 0.17 cm. lata. Pelata oblique lanceolata, vix falcatula, acuta, concava, 3 nervia, nervis lateralibus tenuissimis, c. 0.35 cm. longa, 0.1 cm. lata. Labellum parvum, subsimplex, supra basin et supra medium valde recurvum, undulatum, inferne costis 2 validissimis altissimis carnosis basi introrsum concavis in epichylio humilibus convexisque sulco separatis apicem haud attingentibus, expansum c. 0.26 cm. longum, hypochylio quadrangulo undulato c. 0.14 cm. lato, epichylio (lobo intermedio) paulo latiore triangulo acuto angulis basilaribus obtuso papilloso c. 0.15 cm. longo et lato. Gynostemium curvatum, subtus costa longitudinali instructum, c. 0.2 cm. longum, prorsum e basi bibrachiatum, brachiis gynostemium inexpansum paulum superantibus porrectis linearibus apice leviter dilatatis obtusissimis extus convexis c. 0.225 cm. longis, ala apicali cum clinandrio quadrangula truncata vix retusa concava apice recurvula, pede distincto c. 0.03 cm. longo. Anthera cucullata, late ovato-triangula, apice truncata, c. 0.6 cm. lata, connectivo oblique conico-incrassato. Rostellum breviter ovato-triangulum. acutum. Stigma semiorbiculare, margine inferiore elevatum. Ovarium turbinato-ovale, 6 sulcatum, c. 0.1 cm. longum; pedicellus tenuior, c. 0.175-0.2 cm. longus.

Borneo: Sarawak, on Mt. Batu Lawi, Ulu Limbang, (J. C. Moulton. n. 15, fl. in May 1911). This well marked plant belongs with *D. remotum*, J. J. S., to the species of the section *Platyclinis* with an elongate rhizome. The pseudobulbs are long and slender, there are two very strong keels on the hypochyl of the lip, and the very long linear blunt sidewings are free from the base of the column.

Dendrochilum remotum, J. J. S., n. sp.

Rhizoma elongatum, ramosum, radicans, teres, initio vaginis magnis tectum. Psudobulbi c. 1.1-1.8 cm. distantes, teretes, c. 0.8-1.1 cm. longi, 1folii. Folium petiolatum, ovato-lanceolatum, acutum, c. 5 nervium, nervis minoribus alternantibus, nervis in sicco prominentibus, coriaceum, c. 2.5-3.3 cm. longum, 0.5-1 cm. latum; petiolus distinctus, canaliculatus, c. 0.15-0.3 cm. longus. Inflorescentiae in pseudobulbis novellis synanthae, folia superantes, graciles, pedunculo filiformi c. 2-2.3 cm. longo, rachide compresso-quadrangula c. 4-4.7 cm. longa laxius multiflora. Bracteae pedicellum laxe amplectentes, concavae, expansae ovato-orbiculares, apiculatae, 5 nerviae, c. 0.225 cm. longae et latae. Flores parvi, c. 0.3 cm. diam., sepalis petalisque divergentibus. Sepalum dorsale lineari-lanceolatum, apice recurvum, acutum, concavum, 3 nervium, c. 0.37 cm. longum, 0.07 cm. latum. Sepala lateralia anguste oblique lanceolata, falcatula, acuta, concava, dorso carinata, 3 nervia, c. 0.34 cm. longa, 0.07 cm. lata. Petala anguste lanceolata, falcatula, apice paulum incrassata, acuta, superne minute erosulo-crenulata, concava, 3 nervia, c. 0.3 cm. longa, 0.06 cm. lata. Labellum mobile, curvatum, breviter unguiculatum, vix trilobium, cancavum, intus costis 2 latis haud in unguem productis superne evanescentibus, expansum cum ungue c. 0.13 cm. longum, 0.06 cm. latum, lobis lateralibus erectis brevibus latis crenulatis, lobo intermedio semiorbiculari-ovato subacuto c. 0.04 cm. longo. Gynostemium curvulum, c. 0.125 cm. longum, stelidiis e medio ortis porrectis parallelis ala apicali fere aequilongis lanceolato-subulatis, ala apicali cucullata apice recurva oblonga obtusa, pede cum ovario angulum obtusum faciente c. 0.04 cm. longo. Rostellum recurvum, brevi-triangulum, convexum. Stigma ovale, longitudinale. Ovarium brevissimum, cum pedicello c. 0.075 cm. longum.

Borneo: Sarawak, on Mt. Batu Lawi, Ulu Limbang, (J. C. Moulton, n. 16, fl. in May 1911). Amongst the few species of the section *Platyclinis* with an elongate rootstock (for which Pfitzer and Kranzlin proposed the superfluous and inaccurately defined subgenus *Monochlamys*) this seems to be the smallest one. The lip is only slightly three-lobed, with a relatively very short terminal lobe and 2 stout longitudinal keels.

Dendrobium lawiense, J. J. S., n. sp.

Caules tenues, ramosi, radicantes, c. 25-55 cm. longi, c. 4 cm. supra basin vel plus tenuiter fusiformi-incrassati, parte incrassata c. 4-10 cm. longa 2-3 nodi ad nodos contracta in sicco acute costata, superne foliati, internodiis c. 1.2-3 cm. longis. Folia linearia, apicem versus leviter angustata, inaequaliter biloba, dense in sicco prominenter nervosa, rigidula, c. 3.8-6.5 cm. longa, in sicco 0.2-0.325 cm. lata; vaginae tubulosae, costulatae, crebre et minute puncticulatae, internodia paulum superantes. Inflorescentiae ad nodos partis caulium superioris, fasciculares, squamis siccis ad c. 0.5 cm. longis cinctae, paucos flores gignentes. Flores mediocres, fugaces. Sepalum dorsale lanceolatum, obtusum (?), 7 nervium, c. 1.5 cm. longum, 0.46 cm. latum. Sepala lateralia mentum breve rectum conicum lateraliter compressum obtusum cum ovario angulum rectum faciens c. 0.5 cm. longum formantia, oblique sublanceolata, breviter subacuta, basi oblique dilatata, c. 7 nervia, c. 1.7 cm., usque ad apicem menti 2.4 cm. longa, 0.625 cm. lata. Labellum pedi gynostemii parallelum, subrectum, elongatum, angustum, concavum, 3 lobum, $\frac{1}{3}$ parte inferiore intus pilosum, costis 3 simplicibus glabris valde approximatis medium labelli haud attingentibus, expansum c. 2.15 cm. longum, usque ad apicem loborum lateralium c. 1 cm. longum, ad lobos laterales 0.825 cm. latum; lobi laterales (pars libera) parvi, dentiformes, trianguli, irregulariter dentati; lobus intermedius anguste oblongus, in c. $\frac{1}{3}$ supra basin contractus, apice breviter triangulus, undulatus, crenulatus, basi 0.53 cm., constrictione 0.45 cm. latus. Gynostemium breve, bifidum, c. 0.16 cm. longum, auriculis magnis sursum curvis falcatis laciniatis, filamento brevissimo. Anthera majuscula, cucullata, conica, lateraliter compressa, sulco longitudinali, apice producta breviter 3 dentata, c. 0.175 cm. longa. Stigma obtriangulum. Pes gynostemii cum ovario angulum rectum faciens, rectus, intus costa longitudinali infra apicem glandulam subglobosam gerente instructus, c 0.5 cm. longus. Ovarium breve, obconicum, 6 sulcatum, c. 0.2 cm. longum; pedicellus tenius, c. 0.6 cm. longus.

Borneo: Sarawak, on Mt. Batu Lawi, Ulu Limbang, (J. C. Moulton, n. 8 and 9, fl. in May 1911). A very distinct species allied to *D. crumenatum*, Sw., well marked by its slender stems relatively long above the base thicked into a slender elongate pseudobulb, narrow leaves, a comparatively short mentum and an elongate lip with small sidelobes.

Eria lawiensis, J. J. S., n. sp.

Caules approximati, teretes, c. 20 cm. longi, foliati, internodiis c. 0.6-1.2 cm. longis. Folia linearia, parte superiore c. 1.2-2 cm. longa oblique pugioniformi carinataque, anguste obtusa, basi leviter contracta, supra concava, subtus convexa, adulta glabra, impresse nigro-punctata, crasse carnosa, c. 4-5.5 cm. longa, c .0.3-0.4 cm. lata; vaginae tubulosae, internodia paulum superantes, novellae adpresse rufo-pilosae, adultae glabrae et impresse punctatae. Inflorescentiae vaginas 2 perforantes, sessiles, abbreviatae, dense pluriflorae, c. 0.65 cm. longae, rachide dense rufe sublanato-pilosae. Bracteae ovarium longe superantes, concavae, dorso parcius subadpresse pilosae. Flores vagi, parvi, c. 0.325 cm. longi, 0.25 cm. lati, sepalis conniventibus dorso parcius adpresse pilosis, pilis basi tumidis. Sepalum dorsale oblongum, apice leviter recurvum, inferne concavum, superne convexum, 3 nervium, c. 0.3 cm. longum, basi 0.13 cm. latum. Sepala lateralia vix mentum formantia, oblique triangula, obtusa, concava, dorso carinata, 2-3 nervia, c. 0.325 cm. longa, basi 0.2 cm. lata. Petala oblique linearia, inferne leviter dilatata, apice subrecurva, obtusa, glabra, 1 nervia, c. 0.3 cm. longa, 0.06 cm. lata. Labellum porrectum gynostemio parallelum, concavum, 3 lobum, glabrum, ecallosum, 3 nervium, ima basi excavationibus 2 parvis subtus convexis donatum, expansum ambitu quinquangulare, c. 0.275 cm. longum et latum; lobi laterales erecti, rotundati, repandulo-crenati; lobus intermedius sinibus late obtusis a lobis lateralibus sejunctus, porrectus, triangulus, anguste obtusus, concavus, marginibus antice incurvis. Gynostemium a dorso compressum, breve, latum, glabrum, bene 0.1 cm. longum, clinandrio concavo cum costa longitudinali, auriculis obtusissimis concavis extus conxexis. Anthera cucullata, subtrapeziformis, apice truncata et utrinque in lacinulam triangulam exeus, c. 0.075 cm. lata. Stigma breve, reniforme. Pes gynostemii cum ovario et gynostemio angulum rectum faciens, abbreviatus, c. 0.04 cm. longus. Ovarium sessile, dense subadpresse pilosum, c. 0.14 cm. longum.

Borneo: Sarawak, on Mt. Batu Lawi, Ulu Limbang, (J. C. Moulton, n. 14, fl. in May 1911). An inconspicuous but distinct species of the *Trichotosia* section, with thick linear leaves, trigonous subulate at the apex, very short and dense inflorescenses of small flowers, linear petals and an extremely short column foot .

Eria ovilis, J. J. S., n. sp.

Pseudobulbi approximati, vaginis alternatim bifariis conduplicatis oblongo-triangulis accrescentibus ad c. 6.5 cm. longis tecti, verisimiliter 2 folii. Folia erecta, divergentia, lanceolato-loriformia, inaequaliter vel subaequaliter obtusa, basi conduplicata, costa media supra in sicco sulcata, crasse coriacea, rigida, c. 20-27 cm. longa, 3.1-3.8 cm. lata. Inflorescentia valida, elongata, suprene dense multiflora, cylindrica, omnino dense et crasse lanata, pedunculo c. 36.5 cm. longo, plures squamas parvas in lanam immersas gerente, rachide arcuata c. 25 cm. longa. Bracteae triangulae, dense lanatae, c. 0.15-0.2 cm. longae. Flores parvi, c. 0.73 cm. longi, sepalis dorso crasse lanatis petalisque conniventibus. Sepalum dorsale triangulum, obtusum, concavum, c. 0.4 cm. longum, 0.3 cm. latum. Sepala lateralia lacinia oblique oblonga concava ad pedem gynostemii decurrentia, mentum rotundato-saccatum cum ovario angulum acutum faciens formantia, parte libera late oblique ovato-triangula, obtusa, concava, 5 nervia, c. 0.37 cm. longa tota latitudine c. 0.65 cm. (cum pilis). Petala oblique oblonga, oblique obtusa, basi oblique dilatata, minute erosula, 3 nervia, c. 0.375 cm. longa, medio 0.1 cm. lata. Labellum patens, breviter et late unguiculatum, ungue valde concavo, concavum, apice leviter recurvum, marginibus medio valde involutis tubuloso-contiguis subpanduratum, glabrum, ecallosum, 5 nervium, inexpansum c. 0.45 cm. longum, expansum ambitu oblongum, lobo medio excepto constrictione utrinque 2 lobulatum, lobulis rotundatis, c. 0.525 cm. longum, ad 0.25 cm. latum, lobo intermedio (epichylio) quinquangulari subtrilobulo (eo labellum proprie 7 lobulatum) obtuso margine papilloso c. 0.14 cm. longo 0.2 cm. lato. Gynostemium humile, basi constrictum, ovario multo tenuius, dorso convexum, c. 0.15 cm. longum, clinandrio concavo, apice obtusissimo. Rostellum breve, obtusissimum, recurvulum. Stigma transversum, margine inferiore elevatum. Pes gynostemii cum ovario angulum acutum faciens, sigmoideus, apice incurvus, antice incrassatione Vformi ornatus, usque ad apicis ovarii marginem inferiorem c. 0.35 cm., ad ejusdem marginem superiorem 0.67 cm. longus. Ovarium pedicellatum clavatum, crasse lanatum, c. 0.9 cm. longum, pedicello c. 0.325 cm. longo.

Borneo: Sarawak, on Mt. Batu Lawi, Ulu Limbang, (J. C. Moulton, n. 6, fl. in May 1911). Found on a tree, alt. 5,660 ft. A species of the section *Aeridostachya* with dense thickly woolly inflorescences. The petals are not falcate. The lip is contracted in the middle and has an obscurely 3 lobed midlobe.

APPENDIX III.

The Ferns of the Batu Lawi Expedition.

BY E. B. COPELAND, DEAN OF THE COLLEGE OF AGRICULTURE, LOS BAROS.

Of the fifteen species sent, four and probably five are new to science. Besides these, there is one which cannot be specifically determined and one which has never been collected except in Borneo; the others are all of sufficiently General distribution in the Malayan region so that they do not point in one direction more than in any other.

The most notable thing about the collection is the very large proportion of new species. The other striking thing about it is the strong representation of the genus *Plagiogyria.* So far as its species are known, the large majority come from further north than Borneo, and this might be taken as a sign that Batu Lawi with its high elevation has a striking representation of Philippine and more northern plants.

The determinations are as follows:—

1. *Polypodium heterocarpum,* (Bl.) Mett.
2. *Polypodium soridens,* Hook., a very small and compact form.
3. *Lycopodium cernuum,* L.
4. *Athyrium Moultoni,* Copel., n. sp.

Stipite usque ad 90 cm. alto, gracile, nitido, nigro, inerme, praecipue deorsum paleis nigris plerisque deflexis vestito; fronde 60 cm. vel ultra alta, 30 cm. lata, tripinnata, rhachibus nigris minute paleatis; pinnis usque ad 25 cm. longis, ca. 6 cm. latis, brevi-stipitatis, acroscopicis longioribus 4 cm. longis, 1 cm. latis, acuminatis; pinnulisii infimis solummodo liberis, sessilibus, serratis, obtusis, lineari-oblongis, 1.5 mm. latis, papyraceis, infra pallidis, costa venisque nigris; costa et interdum venis squamuliferis, venis utroque latere 2 vel 3, simplicibus; soro costale, breve, indusio brunneo, tenue.

Bukit Lawi, Ulu Limbang, May 28, 1911. In color, and in some other details, like *A. atratum* (Christ *sub Diplazio*), but much more finely cut. The specimen sent is three fronds of which only one is in fruit, and it very sparingly; it is therefore probable that the species reaches a considerably larger size than is here indicated.

5. *Balantium pilosum,* Copel., n. sp.

Stipite 20 cm. vel ultra alto, castaneo-purpureo, decidue hirsuto indeque asperulo; fronde 30 cm. alta, 15 cm. lata, subdeltoidea, quadripinnatifida, rhachibus ubique pilis rufo-castaneis densissime vestitis; pinnulis stipitatis, 3 cm. longis, deltoideis; pinnulisii infimis 8 mm. longis, 5 mm. latis, obliquis, profunde pinnatifidis, supra nitidis sparse pilosis, infra dense pilosis, coriaceis; soris in apices dentium minorum inpositis indeque sinus occupare simulantibus, 1 mm. latis, valvis indusii aequalibus: sporangiis pilis copiosis interspersis, annulo obliquo, continuo.

Bukit Lawi, Ulu Limbang, May 28, 1911. The leaf-form is altogether typical of Balantium, but the texture and extreme hairiness are more familiar in Dicksonia and Dennstaedtia.

6. *Cheiropleuria bicuspis,* Presl.

7. *Elaphoglossum,* sp., species cannot be determined without sterile frond and rhizome.

8. *Trichomanes Pluma,* Hooker.

9. *Oleandra coriacea,* Copel., n. sp.

Rhizomate ut videtur erecto; stipite apud basin articulato, supra articulationem 10-15 mm. alto, minute dense paleaceo; fronde 20-25 cm. longa, ca. 18 mm. lata, angustissime caudata, coriacea, rubida, supra glabrescente, infra ad costam paleis linearibus badiis vestita et alibi minute albido-pilosa; venis prominentibus; soris margini quam costae propioribus, rufis.

Bukit Lawi, Ulu Limbang, May 28, 1911. A very distinct species.

10. *Ophioglossum Moultoni,* Copel., n. sp.

Ophioderma stipite alato ca. 5 mm. lato, 25-30 cm. longo; fronde vix aequilonga, ca. 5 cm. lata, lanceolata, utrinque sensim angustata; spica usque ad 10 cm. longa, brevistipitata.

Bukit Buyo, Ulu Limbang; also Bukit Lawi, 3 sheets. An amply distinct, and apparently very constant species.

11. *Plagiogyria,* probably spec. nova, sterile.

12. *Blechnum capense,* (L.) Schlecht.

13. *Plagiogyria egenolfioides,* (Baker) Copel.

(*Lomaria egenolifioides,* Baker in Kew Bull., 1894 p. 7.). Known only from Borneo. This specimen agrees exactly with Baker's diagnosis, except that the pinnae are linear-oblong rather than linear. I cannot detect tubercles on the base of the stipe, but the annulus is oblique and uninterrupted.

14. *Plagiogyria, probably* a juvenile *P. adnata,* (Bl.) Bedd.

15. *Asplenium pellucidum,* Lam.

APPENDIX IV.

Mammals taken on the Batu Lawi Expedition.

By J. C. Moulton.

The number of mammals taken on the expedition was regrettably small owing to the impossibility of spending any length of time in one place so that collectors could go out with guns or set traps.

Only nine specimens were collected representing eight different species.

1. *Macacus nemestrinus,* Linn.

One male, rather darker than usual, from the Madihit, May. A common monkey in South Burma, Malay Peninsula, Sumatra and Borneo.

2. *Semnopithecus hosei,* Thos.

One female from Salindong, June. A species apparently confined to the Baram and Limbang districts. The type was taken at Niah on the Sarawak coast.

3. *Viverra tangalunga,* Gray.

One from Salindong, June. Common.

4. *Tupaia montanus,* Thos.

One example from Mt. Selinguid, alt. 4,500 ft. circ. Compared with three from Mt. Dulit, the median blackish band is not fully developed and the sides lack the rufous tint of adult specimens. Mr. H. C. Robinson kindly examined it and agrees in this identification.

5. *Rhithrosciurus macrotis,* Gray.

One example from the Madihit district. Found in low-lying districts in Sarawak up to some 2000 ft. Not recorded outside Borneo.

6. *Sciurus prevostii,* Desm.

One from Limbang, June. Typical dark-grey backed form. One of the commonest squirrels in Sarawak.

7. *Sciurus notatus,* Bodd.

One from Mt. Derian, alt. 4,500-5,000 ft. May—and one from Limbang in June. The Mt. Derian specimen agrees best with some from Mt. Dulit, but has a darker tail than any from that locality; the black band on each side of the belly is wider than in any Dulit specimen in the Museum. The underneath is rich reddish like the Dulit form. The Limbang example agrees with those taken near Kuching. A common squirrel all over Sarawak.

8. *Cervulus muntjac,* Zimm.

A male from Salindong. Common.

APPENDIX V.

Birds taken on the Batu Lawi Expedition.

By J. C. Moulton.

Forty six specimens representing thirty different species of Birds were taken altogether on the expedition. They fall naturally into two divisions, (i) species from Limbang and the lower waters of that river as far up as Kuala Saladong; nearly all of which are found commonly in Sarawak and for the most part are widely distributed over India, China and Malaya. (ii) species from the mountainous country south and east of the Madihit, taken at altitudes of 3000 to 5000 feet. These are mostly rare species previously recorded from Mts. Kina Balu or Dulit only. Twenty species may be referred to the first of these divisions and ten to the second. The latter number shows a relatively high proportion of interesting species considering the short time actually spent in collecting and there is no doubt that a longer stay in the mountainous region would have produced many more interesting species.

1. *Haematortyx sanguiniceps,* Sharpe.

A male and female, the latter doubtly identified as this. Both shot on the same day 25.5.11. This rare partridge has been previously recorded from Mt. Kina Balu, Lawas Mts. and Mt. Dulit only.

2. *Rollulus roulroul,* Scop.

Three males and one female at Salindong, June. A common partridge in Sarawak with habitat extending over Malay Peninsula, Sumatra, Java and Borneo.

3. *Argusianus grayi,* Elliott.

One male example of the Argus pheasant from Salindong, June, shot this species is confined to Borneo, though an allied species occurs in Siam, Malay Peninsula and Sumatra. We found the dancing ground of this species on the hill above Salindong and heard its curious cry frequently.

4. *Butreron capelli,* Temm.

Five examples of this pigeon from Kuala Madalam. It also occurs in Malay Peninsula, Sumatra and Java; apparently not common in Sarawak.

5. *Carpophaga aenea,* Linn.

Three specimens of this common pigeon near Limbang. Widely distributed over India, China and Malaya.

6. *Ducula badia,* Rafll.

A single example from Salindong. This is a rare pigeon in Sarawak, and apparently only found in mountainous districts, *eg.,* Mt. Kina Balu and Mt. Dulit.

7. *Spilornis pallidus,* Wald.

One from Mt. Derian, alt. 4,500 ft. June 1st. This eagle is confined to Borneo.

8. *Pandion haliaetus,* L.

One from Limbang, June. Although widely distributed, apparently rarely met with in Sarawak.

9. *Polioaetus ichthyaetus,* Horsf.

Young form from Salindong, June. A widely distributed species.

10. *Ninox scutulata,* Raffl.

One from Limbang, June. The species is found in South India and Malaya.

11. *Psittinus incertus,* Shaw.

One example of this common parrot near Limbang, June. It occurs over Indo-Malaya.

12. *Eurystomus orientalis,* Linn.

One from Limbang. Common in Sarawak and widely distributed. The closely allied *Eurystomus calonyx,* Sharpe, is much rarer.

13. *Pelargopsis leucocephala,* Gm.

One from Limbang in June. A common king-fisher along some of the Sarawak rivers and apparently confined to Borneo.

14. *Anorrhinus galeritus,* Temm.

One from Limbang in June. A common Horn-bill in Sarawak; also found in Malay Peninsula and Sumatra.

15. *Hierococcyx fugax,* Horsf.

One young one from Limbang, June. This Cuckoo does not seem to be common in Sarawak. It also occurs in Sumatra, Java and the Philippines. Mr. H. C. Robinson kindly examined this for me and concurred in my identification.

16. *Zanclostomus javanicus,* Horsf.

Two from Salindong in June. Common in Sarawak. Also occurs in Malay Peninsula, Sumatra and Java.

17. *Urococcyx microrhinus,* Berlep.

One from Salindong. A common species in Borneo. The closely allied *U. erythrognathus* comes from Malay Peninsula and Sumatra.

18. *Calyptomena viridis,* Raffles.

One from Salindong, June. A common broadbill in Sarawak. The species is found in Malay Peninsula and Sumatra.

19. *Calyptomena whiteheadi,* Sharpe.

One taken on Mt. Selinguid, near Batu Lawi alt. 4,700 ft., May 29th. Only known from the mountainous district of North West Borneo.

20. *Eurylaemus ochromelas,* Raffles.

One from Kuala Madihit, May 17th. A common species in Sarawak and distributed over Malay Peninsula and Sumatra.

21. *Cymborhynchus macrorhynchus,* Gm.

Two specimens from Limbang, June. A common bird in Sarawak; also found in Tenasserim and Siam.

22. *Pitta granatina,* Temm.

One from the Kuala Madihit, May 17th. Fairly well distributed over Sarawak, not found outside Borneo.

23. *Hemixus connectens,* Sharpe .

One from Mt. Derian (alt. 4-5000 ft.). This bulbul is only found in the mountains of Northern Borneo. There are eleven other examples in the Sarawak Museum from Mts. Kina Balu, Dulit, Penrissen; none from altitudes below 3,000 ft.

24. *Garrulax schistochlamys,* Sharpe.

Two specimens of this Laughing-Thrush from Mt. Derian, 4700 ft., May 26th. Previously recorded from Mts. Kina Balu and Dulit only. Iris claret, eyelid light blue, legs and feet dark slate.

25. *Allocotops calvus,* Sharpe.

One from Mt. Derian, 4,700 ft. May 26th. Previously known from Mts. Kina Balu and Dulit only.

26. *Rhinocicla treacheri,* Sharpe.

Four examples shot on Mt. Derian 4,700 ft. May 26th. Iris black-brown, eyelid yellow, beak orange, legs, feet and claws yellow. Murut and Kalabit name is "marabbiar." Only recorded from N. W. Borneo (Kina Balu) before. The closely allied *R. mitrata,* Müll., occurs in Sumatra and the mountains of the Malay Peninsula.

27. *Cittocincla suavis,* Scl.

One specimen from Limbang, June. Fairly common in Sarawak; not found outside Borneo.

28. *Oriolus hosei,* Sharpe.

One example of this rare Oriole from Mt. Turan, alt. circ. 4000 ft. Iris claret, beak red. Previously recorded from Mt. Dulit only.

29. *Buchanga stimatops,* Sharpe.

One from Mt. Derian, alt. 4,700 ft. This Drongo has been found on Kina Balu and in Sumatra.

30. *Platysmurus aterrimus,* Temm.

One specimen from Salindong, June. A common bird in Sarawak; not found outside Borneo, though an allied species occurs in Sumatra and another in the Malay Peninsula and Sumatra.

APPENDIX VI.

Butterflies taken on the Batu Lawi Expedition

By J. C. Moulton.

At first sight the total of 113 different species recorded compares very favourably with other lists compiled on similar expeditions* and this was no doubt due to the diverse nature of the regions passed through, including as it did perhaps the two best kinds of country for butterfly-collecting, namely, (i) stony or sandy banks of rivers and small sunny streams bordered in each case with tall virgin jungle, (ii) cleared mountain-tops. In the former class one meets a great number of Papilios, Pierines and small Lycaenids, usually congregated together in crowds on wet patches of sand, on wet clothes drying in the sun, or on refuse. In the latter class of country we were fortunate enough to have one beautiful fine day on the top of Mt. Selinguid, alt. 4,250 ft. For the greater part of our land journey we were walking in deep dark jungle and usually in rain, so that the butterflies we saw then were remarkably few. The list might easily have been larger if examples of more common species had been taken, such as *Mycalesis, Erites, Elymnias, Amathusia, Neptis, Athyma, Adolias, Euthalia, Tranaecia,* etc., etc., but I have not included them as I did not know them well enough to identify specifically with any certainty in the field and so made no notes of their occurrence, although representatives of those genera were certainly seen.

As did the birds, so do the butterflies fall into two natural groups (i) common, widely distributed, typical Malayan species mostly taken on the river journey (Limbang to the Madihit) and (ii) rare mountain species taken on the land journey between the head-waters of the Madihit and Batu Lawi, alt. 2,000-5,600 ft. We may refer 75 to the former class and most of the remaining 38 to the latter. The comparatively large totals of 50 different Lycaenidae and 16 different Pierinae are perhaps worthy of comment, considering the short time spent in actual collecting, while the totals of 21 species of Nymphalidae and 14 Hesperidae can only be characterized as distinctly poor.

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*In a month's collecting on Mt. Penrissen, Sarawak, Mr. Shelford recorded 56 different species of butterflies (Journ. Str. Br., Roy. Asiat. Soc. No. 35. pp. 29-36 1901)

The geographical distribution of the species taken in the mountainous district primarily points to a close relation with the butterfly-fauna of Kina Balu and other mountains in Borneo, and as we should further expect, species found in the mountains of Sumatra were also taken. Of the more widely distributed species taken, several are found in the Malay Peninsula, Sumatra, Burma, Palawan, the Philippines, Java and India (perhaps the most occurring in the Malay Peninsula and Sumatra, and the least number in Java and India).

NYMPHALIDAE.

1. *Ideopsis daos,* Boisd.

Madihit, May 16th, (and its mimic the Chalcosid moth, *Isbarta pieridoides,* H. S. taken on Mt. Selinguid, May 31st). This common Danaine is widely distributed over Indo-Malaya.

2. *Danais aspasia,* Fab.

Madihit, May 16th. A common Danaine with wide distribution.

3. *Danais crowleyi,* J. Weir.

Mt. Selinguid, alt. 4,850 ft. This species is only known from the mountains of Borneo and Mr. Shelford in his "Butterflies of Borneo"* only records it from Mts. Kina Balu and Penrissen. It has since been taken on Mt. Poe in Sarawak.

4. *Euploea crameri,* Lucas.

Very common on the muddy banks of the Melana and Apoh Rivers, June. Not noticed on the Limbang River or in the mountain districts.

5. *Euploea bremeri,* Feld.

One male taken on Mt. Selinguid, alt. 4,850 ft. May 31st. These last two species are widely distributed over the Indo-Malayan region.

6. *Euploea scudderi,* Butler.

A male taken on June 4th, Ulu Madihit. The species is confined to Borneo, but not scarce.

7. *Euploea diocletianus lowii,* Butl.

Common on the muddy banks of the Apoh and Melana Rivers flying with *E. crameri.*

8. *Mycalesis anapita,* Moore.

Limbang. A very common species; also occurs in Malay Peninsula and Sumatra.

**Journn. Str. Br., Roy. Asiat. Soc.* No. 41. 1904. p. 87.

9. *Thaumantis aliris,* Westw.

A male between Mt. Derian and hill above Rapaw, alt. circ. 3,000 ft., June 2nd, and another at Salindong, June 10th. This species is confined to Borneo; flies low in thick jungle. Common on Mt. Matang and I have seen it feeding on a dead mammal on Mt. Serambu.

10. *Cynthia erota erotella,* Butl.

Common on the banks of the Limbang River. A widely distributed species.

11. *Cirrochroa bajadeta,* Moore.

Salindong. A common species, also occurring in the Malay Peninsula and Java.

12. *Cirrochroa malaya calypso,* Wall.

One from Salindong. A common species, also occurring in the Malay Peninsula and Sumatra.

13. *Adolias dirtea,* Fab.

A female from Salindong, June 11th. Common and widely distributed species.

14. *Cyrestis seminigra,* Gr. Sm.

One on Mt. Selinguid, alt. 4,850 ft., May 31st. A rare species, confined to Borneo, and principally to high altitudes.

15. *Kallima inachis buxtoni,*

Seen on two occasions, on the Limbang River. This subspecies, the Bornean representative of the celebrated Leaf-butterfly of the Indo-Malayan region, is rare in Sarawak. It seems less scarce at Limbang, and I have seen it on Mts. Serambu and Penrissen, but its strong flight and beautiful protective device render it very hard to capture.

16. *Doleschallia bisaltide borneensis,* Fruhst.

One from Salindong, June 12th. A common species in Sarawak. *D. bisaltide* has a wide distribution over Indo-Malaya.

17. *Eulepis delphis concha,* Vollenh.

Near Kuala Delong, Limbang River, May 14th, and one at Madihit, May 16th. We also saw it on sunny places along the rocky banks of the Limbang, flying with the common Pierine, *Catopsilia crocale,* Cr. Its stronger flight at once distinguished it from that species.

18. *Prothoe francki angelica,* Butl.

Madihit, May 16th. A common and widely distributed species.

19. *Zemeros emesioides eso,* Fruhst.

Kuala Madalam, Limbang River, May 11th. The typical form occurs in Sumatra and the Malay Peninsula.

20. *Laxita orphna,* Boisd.

A single female taken at the foot of Mt. Selinguid, alt. 2,700 ft., May 31st. This specimen differs from typical *orphna* in having a broader sub-apical band of red on the upperside of fore-wing which is developed at the expense of the fuscous in basal area. On the underside the irridescent spots are slightly less developed. A common species in Sarawak showing little variation.

21. *Laxita telesia,* Hew.

Madihit River, May 18th., and Salindong, June 11th. A common butterfly in Sarawak.

FAM. LYCAENIDAE.

22. *Gerydus innocens,* Druce.

A single female captured by the mountain stream Palabar (which flows between Mts. Selinguid and Batu Lawi) alt. 3,740 ft., May 31st. Previously recorded from Mt. Kina Balu only.

23. *Gerydus ancon,* Doh.*

A female from foot of Mts. Selinguid and Batu Lawi, alt. 3,740 ft.

24. *Allotinus horsfieldi,* Moore.

A male from Ulu Madihit, May 18th; a common and widely distributed species.

25. *Allotinus aphocha,* Kheil.

Salindong, June 11th. Common in Sarawak; also occurs in Nias Island.

26. *Notarthrinus musina,* Snell.

A common species in the upper waters of the Limbang and Madihit rivers. In some places hundreds could have been caught on certain favoured patches of wet sand.

27. *Neopithecops zalmora,* Butl.

Madihit June 4th, alt. 2,000 ft., and Mt. Derian, alt. 4,500 ft., May 26th.

28. *Megisba malaya,* Horsf.

Kuala Madalam, Limbang River, May 10th; the dry-season form with white discal patch to fore-wing.

29. *Lycaenopsis shelfordi,* de Nicév.

Salindong, June 16th. Mr. Druce kindly examined this specimen and identified it thus. Another specimen he identifies as the hitherto unknown female of this species, which he proposes to describe soon and place in the British Museum.

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*For note on the identification of this specimen see "A List of the Butterflies of Borneo with Descriptions of New Species" Part III. Lycaenidae, by the writer, in *Journ. Str. Br., Roy. Asiat. Soc.* No. 60. 1911 pp. 77-78.

30. *Lycaenopsis ripte,* Druce.

One male from Ulu Madihit, alt. 2,000 ft. Only known from North Borneo.

31. *Lycaenopsis puspa,* Horsf.

Penribut's house, Ulu Madihit, alt. 2,000 ft., May 19th.

32. *Lycaenopsis limbata placida,* de Nicév.

Along mountain streams from Ulu Madihit to the foot of Mt. Selinguid alt. 1000-3000 ft.

33. *Lycaenopsis camenae,* de Nicéville.

Salindong, June 11th. A rare species in Sarawak. Occurs in Sumatra commonly according to de Nicéville and Martin.

34. *Lycaenopsis dilecta,* Moore.

Very common on mountain streams between head-waters of the Madihit and Limbang, including the upper waters of these two rivers.

35. *Lycaenopsis plauta,* Druce.

Three males taken on mountain streams between the Madihit and Mt. Selinguid, and a female at Selindong June 11th. This species is confined to Borneo.

36. *Lycaenesthes lycaenina,* Feld.

A small male from Salindong, June 11th.

37. *Nacaduba lugine,* Druce.

A single female May 20th, near Penribut's house, Ulu Madihit, alt. 2,000 ft. The male only was hitherto known and I have made this specimen the type female.*

38. *Nacaduba ardates,* Moore.

Very common on the banks of the Limbang extending to most of the mountain streams beyond the Madihit.

39. *Una usta,* Dist.

This distinct well-marked little Lycaenid was very common on wet patches of sand on the upper waters of the Limbang and Madihit rivers.

40. *Lampides elpis,* Godt.

Madihit, May 21st.

41. *Lampides virgulatus,* Druce.

Kuala Madalam, Limbang River, May 11th, and Ulu Madihit june 4th. This species is confined to Borneo.

42. Lampides coerulea, Druce.

Madihit, alt. 2,000 ft., May 21st. A rare species chiefly found in the mountainous districts of Borneo. It also occurs in Sumatra.

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*Described in *Journ. Str. Br. Roy. Asiat. Soc.* No. 60. 1911, p. 101.

43. *Lampides zebra,* Druce.

Madihit, May 21st and June 4th. A common species in Sarawak; very like the Indo-Malayan *L. celeno,* Cr., which also occurs in Borneo.

44. *Catochrysops cnejus,* Fab.

Madihit, June 5th.

45. *Castalius ethion,* Doubl. and Hew.

Mt. Derian, alt. 4,500 ft., May 26th and Madihit, June 4th.

46. *Castalius elna,* Hew.

A very small female on the Madihit. It differs from typical Sarawak *elna* in having the dark sub-anal band on underside of hind-wing discontinuous, due to the absence of a spot between the third and second median nervules. Exp. al. 21 mm. (forma typica, exp. al. 27.33 mm.). Both these species of *Castalius* are widely distributed over Indo-Malaya.

47. *Curetis thetis aesopus,* Fab.

Madihit, May 16th and June 4th.

SUB. FAM. ARHOPALINAE.

48. *Iraota rochana,* Horsf.

A male from Salindong, June.

49. *Amblypodia narada,* Horsf.

A fine male taken feeding on mammal excreta at Kuala Madalam, May 11th. Rare in Sarawak, also found in the Andamans, Malay Peninsula and Archipelago.

50. *Arhopala hypomuta,* Hew.

Limbang, June. Also found in India and Malay Peninsula.

51. *Arhopala sarawaca,* Molton.

Madihit, alt. 2,000 ft., June 4th. The types male and female of this species (described last year were taken near Kuching. So far only known from Sarawak.

52. *Arhopala diardi,* Hew.

A fine male taken on the summit of Mt. Selinguid, alt. 4,850 ft., May 31st. Common in Sarawak and widely distributed over Indo-Malaya.

53. *Arhopala fulgida,* Hew.

A male taken on the summit of Mt. Selinguid, May 31st. This species is rare in Sarawak; it is also found in the North India, the Philippines, Malay Peninsula, Billiton and Sumatra.

54. *Tajuria donatana,* de Nicév.

Salindong, June. Found fairly abundantly on the summits of Mts. Matang and Santubong.

55. *Tajuria travana,* Hew.

Mt. Selinguid, alt. 4,850 ft., May 31st., Madihit, May 16th. Very common on the edge of some paddy farms.

56. *Hypolycaena erylus,* Godt.

Near Kuala Delong, Limbang River, May 14th. A common species in Sarawak.

57. *Chliaria phemis,* H. H. Druce.

Two examples taken near the junction of the Kri rivers, alt. 2850 ft., May 27th. A rare species in Sarawak.

58. *Virgarina scopula,* Druce.

A male from Salindong, June 11th. Differs from typical Sarawak males in the blue on upperside of hind-wing extending more deeply into the basal region.

59. *Cheritra freja,* Fab.

Madihit, May 16th. A common species in Sarawak.

60. *Horaga corniculum,* Druce.

Mt. Selinguid 4,850 ft. Previously recorded from Mts. Kina Balu, Matang and Molu (Malinau) only.

61. *Horaga affinis,* Druce.

Madihit, alt. 2,000 ft., May 21st, one example. A rare species hitherto recorded from Mt. Kina Balu and Labuan only.

62. *Horaga albistigmata,* Moulton.*

A single male from the Madihit, alt. 2,000 ft., May 21st, forms the type and only known example of this species.

63. *Catapoecilma elegans,* Druce.

Salindong, June 12th. Common in Sarawak, and found in India, Malay Peninsula, Sumatra and Nias Island.

64. *Biduanda thesmia,* Hew.

Madihit, May 21st and June 4th, two examples referable to var. *unicolor,* Staud. A common species in Borneo, and found elsewhere in Malaya.

65. *Marmessus moorei,* Dist.

A small female near Limbang, June. It has no orange sub-apical marking in the fore-wing. Both forms with most intermediate stages occur in Sarawak. The species is also taken in Sumatra and the Malay Peninsula.

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* Described loc. cit. p. 159.

66. *Eoxylides tharis,* Hub.

A female from Limbang, June. Common in Sarawak and widely distributed over Indo-Malaya.

67. *Sithon nedymond,* Cram.

A fine female, Mt. Derian, alt. 4,500 ft., May 26th. This species is rare in Sarawak. Also found in Burma, Malay Peninsula, Sumatra and Java.

68. *Rapala varuna,* Horsf.

Limbang River and Madihit, May 16th, 21st, and June 6th. Distributed over India and Malaya.

69. *Rapala pheretima,* Hew.

Limbang, June. Distributed over India and Malaya.

70. *Rapala xenophon,* Fab.

From Kuala Madalam, Limbang River to the Madihit, May 11th to 21st. Distributed over India and Malaya.

71. *Rapala barthema,* Dist.

Salindong, June 11th. Also occurs in the Malay Peninsula.

PAPILIONIDAE.

72. *Delias metarete,* Bult.

Two males from Madihit, May 21st, and Salindong, June 12th. Principally found in mountainous districts in Sarawak.

The species is confined to Malay Peninsula (including Lower Tenasserim), Sumatra and Borneo.

73. *Delias hermione,* n. sp.

Mr. Shelford has sent me a manuscript description of this species based on a single specimen taken on Mt. Matang. He writes that it is the Bornean representative of *Orphne,* Wall. It will be fully described in the "Butterflies of Borneo" now in process of publication,* so the following brief description will suffice now.

Male. Upperside. Milky white (as in *D. cornelia,* Vollenhoven), with narrow fuscous edging along costa apex and hind-margin in fore-wing; veins of fore-wing darkened.

Underside. *Fore-wing.* Fuscous with greyish suffusion over basal half including the inner margin, two spots of same colour below costa and beyond cell three more exterior to those, and two small whiter spots between the first and second, and second and third median nervules, the latter linear and slightly shifted inwards. *Hind-wing.* Dark fuscous with the following large bright yellow spots:—large roundish spot at the base of costa, small touch of yellow at apex of costa with large oval spot immediately below it, followed by sub-marginal row of six oval spots increasing in length and size, the fifth and sixth fused and covering the inner marginal region; a large spot at end of cell slightly extending above and beyond it.

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* "A List of the Butterflies of Borneo" Parts I. & II. Nymphalidæ, by R. Shelford, published in the Journal of the Str. Br., Roy. Asiatic Society 1904-5, and Part III. Lycaenidæ by J. C. Moulton in the same publication 1911.

Female differs from the male in having a broad fuscous margin on upperside of fore-wing from costa including apex nearly to anal angle reaches just below first median nervule. Underside as in male.

Exp. al. ♂ 56-59 mm. ♀ 60-63 mm.

Several on summit of Mt. Selinguid, 4,850 ft., May 31st.

74. *Delias pandemia,* Wall.

A male from Madihit, May 21st, and two females at Salindong June 10th and 11th. A local species, not rare in the Limbang district; I have also taken it at Lawas and Bintulu in Sarawak. Confined to Borneo.

75. *Delias parthenia,* Staud.

One male from Madihit, alt. 2,000 ft., May 21st. A rare mountain species confined to Borneo.

76. *Catopsilia crocale,* Cr.

Both seasonal forms were very common all the way up the Limbang and Madihit Rivers; of those captured there are three females of typical dry season form bearing the date May 14th, one female and five males of the typical wet season form bearing the dates May 14th and 16th.

77. *Terias harina,* Horsf.

A female on Mt. Selinguid, 4,850 ft., May 31st.

78. *Terias hecabe,* L.

Common everywhere. Taken near Penribut's house, alt. 2,000 ft. in company with its mimic the Chalcosid moth (female) *Chalcosia hecabe,* Jord.*

79. *Terias sari,* Horsf.

One was taken on Mt. Selinguid. I think this species was as common as the preceding one. Specimens of both these species were taken at Salindong, June 11th.

80. *Dercas gobrias,* Hew.

Salindong, June 12th. Common in most sunny spots up the Limbang. Also occurs in the Malay Peninsula and Sumatra.

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* Mentioned in note on Mimicry among some Bornean Insects by the writer in the Proceedings of the Entomological Society of London 1911. p. LXXV.

81. *Ixias undatus,* Butl.

Salindong, June 9th and 12th. Rather a rare Pierine in Sarawak, though less scarce in the Limbang district than elsewhere. Confined to Borneo.

82. *Catophaga plana,* Butl.

Kuala Madalam, Limbang River, May 11th. A common Pierine. Also found in Malay Peninsula and Sumatra.

83. *Catophaga nero,* Fab.

Limbang River, May 11th and 14th. Also occurs in Java.

84. *Catophaga flavius,* Gr. Smith.

Limbang, May, and Salindong, June. Both these red Pierines were often seen up the Limbang. Originally described from N. E. Borneo.

85. *Catophaga cardena,* Hew.

One from Mt. Selinguid, alt. 4,850 ft., May 31st. A typical mountain species. Also occurs in Malay Peninsula and Sumatra.

86. *Huphina hespera,* Butl.

Two males from Salindong, June 9th, and two females from the same place June 11th and 12th. A common species in Sarawak. Confined to Borneo.

87. *Hebomoia borneensis,* Wall.

Salindong, June 12th. A common species.

88. *Troides brookeanus,* Wall.

Fairly common in the Madihit hills and generally up the Limbang.

89. *Troides amphrysus ruficollis,* Butl.

A female from Limbang, June.

90. *Papilio noctula,* Westw.

One female from Limbang, June, which I refer with some doubt to this species. It differs from the only other female in the Sarawak Museum in the internervular fuscous ground-colour on the underside of the hind-wing which shows light constrictions suggestive of an approach towards the *noctis* type in which this constriction has been carried out, resulting in a hind-marginal row of well defined spots. A typical female *noctis* was taken on the Limbang River in April 1910.

91. *Papilio demolion,* Cr.

Salindong, June 11th. A common butterfly in Sarawak.

92. *Papilio iswara,* White.

Salindong, June 12th. A common butterfly in Sarawak.

93. *Papilio slateri hewitsoni,* Westw.

The Limbang River, near Kuala Delong, May 14th. Not common in Sarawak.

94. *Papilio arjuna carnatus,* Rothsch.

Salindong, June 12th.

95. *Papilio payeni brunei,* Fruhst. z

An example of this fine brown Papilio flew over our heads at the Kuala Madalam. I am practically certain it was this species. It has been taken near Mt. Molu.

96. *Papilio antiphates alcibiades,* Fab.

Common up the Limbang River.

97. *Papilio sarpedon,* L.

Common on most sunny places up the Limbang and Madihit rivers very often in company with one or more of *P. eurypylus axion,* Feld., *P. evemon,* Boisd., or *P. bathycles bathycloides,* Honr.

98. *Papilio agamemnon,* L.

Common up the Limbang River in company with the other species just mentioned.

HESPERIDAE.

99. *Satarupa dirae,* de Nicév.

A single example of this species from the Madihit, alt. 2,000 ft., June 4th. Rare in Sarawak. Also occurs in Java and Sumatra.

100. *Tagiades gana,* Moore.

A large female from Mt. Selinguid, alt. 4,850 ft., May 31st. Has a larger expanse of white on the upperside of hindwing than in the typical form. Mr. Druce kindly determined it for me. A common species found in Sikkim, Malay Peninsula, Java and Palawan.

101. *Hasora maestissima,* Mab.

One from Mt. Selinguid, alt. 4,850 ft., May 31st, which has two spots in fore-wing, and one specimen from the Limbang River near Kuala Delong, May 14th, which has no spots in the fore-wing. This latter insect was examined by Mr. Druce and provisionally referred to this species. Also recorded from Kina Balu, Palawan and Mindanao.

102. *Hasora chuza,* Hew.

Taken on or near mountain streams from the Madihit to Batu Lawi at altitudes ranging from 1000-5000 ft. Occurs in Burma and Java.

103. *Bibasis uniformis,* Elwes.

Madihit, May 16th. This species (or possibly *Hasora vitta,* Butl.) was the only butterfly I saw on the higher slopes of Batu Lawi, 5,600 ft. Found in Java, Palawan and Luzon.

104. *Rhopalocampta crawfurdi,* Dist.

Madihit, June 5th. Usually found on the summit of Mt. Matang. Also occurs in the Malay Peninsula.

105. *Ismene etelka,* Hew.

Salindong, June 9th and 12th, and Madihit, May 15th. This species has been taken on Kina Balu and at Lawas; it is also recorded from Singapore.

106. *Ismene harisa,* Moore.

Madihit, alt. 2,000 ft., June 5th. A rare species in Sarawak. Recorded from Sikkim, Burma and Java.

107. *Jambrix stellifer,* Butl.

Two examples from Limbang. Fairly common in Sarawak; also recorded from Malay Peninsula, Sumatra and Java.

108. *Scobura martini,* Elwes.

One specimen from Mt. Derian, alt. 4,500 ft., May 26th. The species is described from a single specimen in the Rothschild collection from the Batak Mts., Sumatra. From the literature available this Sarawak capture appears to be the first record of the species for Borneo and at the same time the second known specimen in existence.

109. *Scobura umbrosa,* Elwes.

A single example known from Salindong, June 11th; this species is described from two examples taken on Mt. Kina Balu. There appear to be no other records of it.

110. *Koruthaialos hector,* Wats.

Madihit, May 20th. Widely distributed over Malaya.

111. *Halpe gupta,* de Nicév.

A single example from Mt. Selinguid 4,850 ft., May 31st. Unfortunately in bad condition and doubtfully identified thus by Mr. Druce. Recorded from Sikkim only.

112. *Pithauria aitchinsoni,* Wd.-Msn.

A single example taken at Kuala Madalam on the Limbang, May 11th . A rare species described from Kina Balu. Piepers records it from Java.

113. *Kerana gemmifer,* Butl.

On the way down Mt. Derian to the rivers Kri, May 27th. Not rare in Sarawak. Also recorded from the Malay Peninsula and Natuna Isles.

APPENDIX VII.

A New Gryllacrid. *

BY DR. A. GRIFFINI.

Gryllacrid Grassii, n. sp.

♂, ♀ - *Corpus statura media, sat majore, superne saturate ferrugineum, subtus partim cyanescens; coxis, femoribus tibiisque omnibus et totis pulcherrime cyaneis, tarsis pallide ferrugineis; spinis pedum optime evolutis, cyaneis; pleuris cyaneo tinctis. Vertice capitis et metazona pronoti partim cyaneo pictis; maculis ocellaribus perspicuis, antennis ferrugineis. Elytris subhyalinis, basi partim cyaneo tinctis, caeterum venis venulisque picescentibus valde expressis. Alis subhyalinis, venis et venulis valde expressis, in campo antico picescentibus, in campo postico brunneis; in campo postico venulae ipsae sub lente fortiori videntur subtillime pallidae, utrinque angustissime brunneo marginatae. Segmento anali ♂ utrinque dente spiniformi horizontali, posterius verso, armato. Ovipositore ♀ longo, ensiformi, perparum incurvo, rigido, latiusculo, apice attenuato, basi cyanescente, apicem versus magis magisque ferrugineo.*

Longitudo	*corporis*	mm.	30	32
„	*pronoti*	„	7	7,5
„	*elytrorum*	„	32,8	32
„	*femorum anticorum*	„	11,2	11,4
„	*femorum posticorum*	„	19	20,3
„	*ovipositoris*	„	—	23,8

HABITAT: Mons Turan apud Batu Lawi in Insula Borneo.

TYPI: 1 ♂ et 1 ♀ (Musaei Hist. Natur. in Sarawak): Batu Lawi expedition, 26-5-1911.

Species apud *Gr. borneensem* D. H. in systemate Brunneri locanda, sed permultis notis distinguenda.

Corpus sat maiusculum, haud crassum; nitidum.

Caput ovoideum subelongatum, pronoto parum latius, anterius depressiusculum. Vertex optime convexus; fastigium verticis minus convexum, lateribus obtuse rotundatis, latitudinem 1½ primi articuli antennarum sensim superans, duplam tamen non attingens. Maculae ocellares flavido-ferrugineae perspicuae, verticis subobliquae seu inferius magis divergentes ibique subacutae: macula frontalis sat magna, ovata vel subrotundata. Frons sub lente minutissime incerteque transverse rugulosa, utrinque impressione punctiformi unica vel duplici praedita, inferius magis depressa et supra clypeum impressa. Organa buccalia longiuscula; palpi labiales apice dilatati. Sulci suboculares inferius late excavati.

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* Reprinted from 'Atti della Società Italiana di Scienze Naturali', Vol. LI, pp. 129—134.

Color capitis saturate ferrugineus; vertex longitudinaliter in medio (♂) vel totus (♀) atro-cyaneo tinctus. Clypeus leviter pallidior, ferrugineo-testaceus, puncto nigricante utrinque plus minusve incerto pictus. Labrum et mandibulae cum capite concoloria, saturate ferruginea. Palpi partim fuscescentes. Antennae ferrugineae sat pallidae, ochraceae, articulis primis duobus incerte parum fuscioribus.

Pronotum a supero visum sensim longius quam latius, in medio bene convexum. Margo anticus rotundatus et prominulus; sulcus anticus valliformis latus, amplus, et a margine antico sat remotus; sulculus longitudinalis abbreviatus in fossulis duabus, antica et postica, parum expressis, disjunctus; sulcus posticus haud perfecte delineatus, tamen gibbula in utroque latere adest ante metazonam; pars antica metazonae plus minusve valliformis, margo posticus limbatus, subascendens, subrectus. Lobi laterales longiores quam altiores, posterius sensim altiores, angulo postico late subrotundato, margine postico subverticali sat alto, sinu humerali modice expresso: sulci et gibbulae in lobis lateralibus optime evoluti.

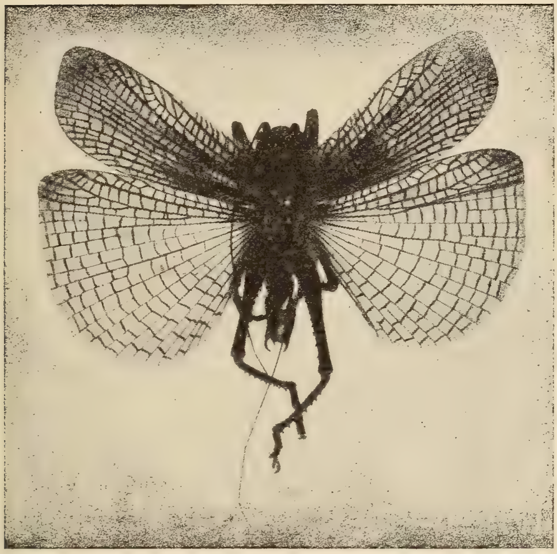
Color pronoti ut capitis saturate ferrugineus; metazona atro-cyaneo tincta, indefinite tamen, hoc colore anterius in colorem ferrugineum evanido et incertissime in medium dorsi et in sulco antico sub quadam luce partim hic illic rursus visendo.

Elytra modice longa, tamen apicem abdominis bene superantia, apicem versus latiuscula, latitudinem maximam circiter mm. 13 attingentia, subhyalina, levissime grisescentia, venis venulisque robustis, picescentibus, basim versus atro-cyanescentibus: basis elytrorum ipsa colore cyaneo violaceo nitente tincta, praecipue in campo postico, indefinite tamen, hoc colore per longitudinem circiter 10 mm. visendo, gradatim minus saturato, denique sine limite evanido.

Alae subhyalinae; venis venulisque bene expressis, fuscis, in campo antico (latiusculo) venis elytrorum similibus, ideoque ibi picescentibus, in campo postico venulis ipsis sub lente fortiori subtillime pallidis, utrinque angustissime brunneo marginatis.

Pedes elongati et robusti, spinis omnibus optime evolutis et pilis singulis paucis, sparsis, longiusculis, praediti. Color coxarum, femorum et tibiarum omnium pulcherrime cyaneus valde nitens, in atro-cyaneum et praecipue in azureo-violaceum sub lucis quibusdam vergens; tarsi, contra, omnes ferruginei pallidi, seu ochracei vel ferrugineo-flavidi.

Tibiae 4 anticae solito modo spinosae, spinis utrinque 4 concoloribus cyaneis, longis, necnon utrinque spinula apicali praeditae. Femora postica basi sat incrassata, dein longe attenuata, tamen haud gracilia, subtus utroque margine toto spinoso, spinulis concoloribus cyaneis, sat robustis, in utroque margine circiter 10-15. Tibiae posticae superne longiuscule post basim modice planiusculae, spinis utrinque 7 fortioribus, concoloribus cyaneis. Tarsi longiusculi.



Gryllacris Grassii ♂

Abdomen superne saturate ferrugineum, margine postico segmentorum parum distincte fusciori, segmentis apicalibus sensim fuscioribus; subtus cum pleuris plus minusve cyaneo tinctum.

♂ - Segmentum abdominale dorsale VIII parum plus quam VII productum, parce fulvo pilosulum. Segmentum IX haud longius, parum cucullatum, superne magis fulvo pilosum, margine postico arcum efficiente fere verticaliter positum, valvulas anales approximatas, optime visendas, sursum versas apiceque in mucronem anterius recurvum terminatas, amplectente. Margo ipse segmenti IX utrinque, parum supra cercum, dentem spiniformem posterius horizontaliter versum praebet. Cerci ferruginei. Lamina subgenitalis transversa, lateribus posterius obtuse rotundatis, margine apicali in medio late sinuato, lobis latis, obtusis. Styli laterales adsunt, sat longi et robusti.

♀ - Ovipositor longus, ensiformis, compressus, perparum incurvus, rigidus, nitidus, basi cyanescens, apicem versus magis magisque ferrugineus, post basim fere 2 mm. altus, a basi ad apicem sensim sed parum attenuatus, apice subacuto tamen haud acuminato; lateribus longitudinaliter costula incerta perparum visenda, latiuscule depressa, praeditis. Lamina subgenitalis subtriangularis, vertice rotundato.

APPENDIX VIII.

List of the Odonata taken on an expedition to Mt. Batu Lawi together with descriptions of supposed new species.

By F. F. Laidlaw, M.A., F.Z.S., etc.

With Plate.

The list given below adds several species to the known Bornean fauna and includes a high percentage of undescribed forms. It will be noticed that probably all the Agrioninae are new to science, a fact which enables one to realize how imperfect our knowledge of the dragonflies of the old world tropics still remains.

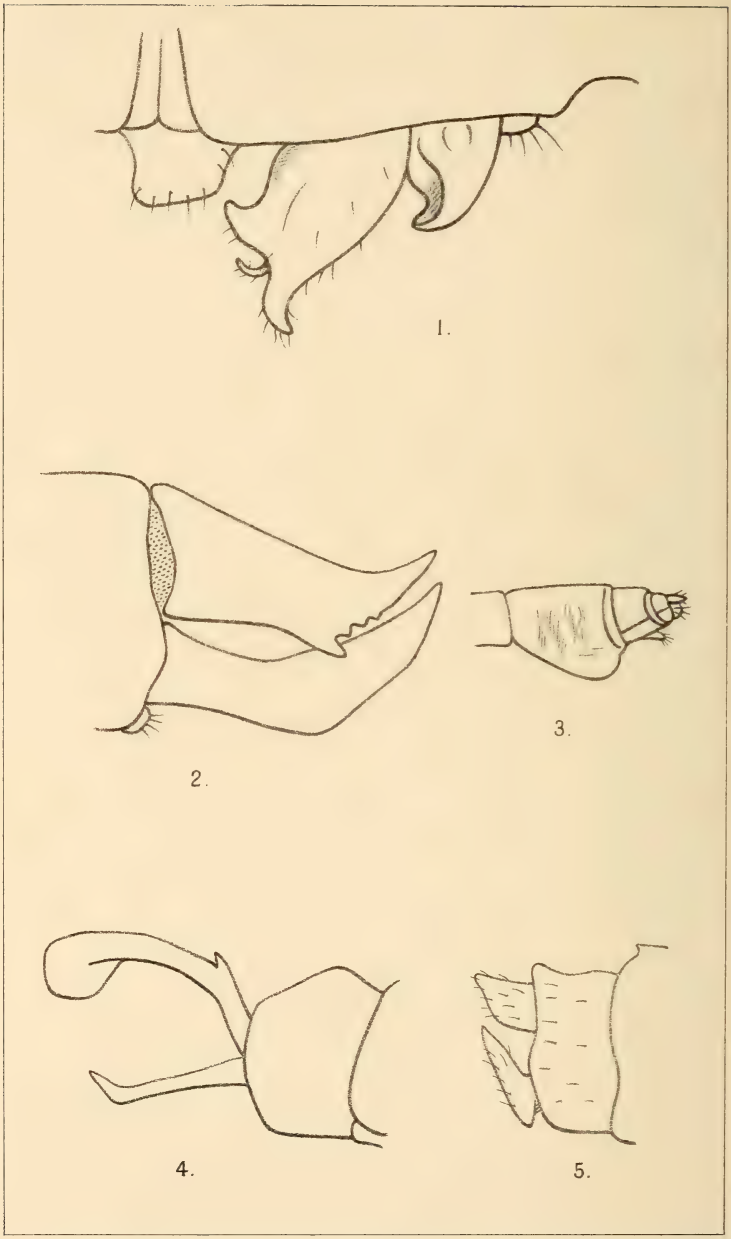
Consequent on this it follows that the systematic arrangement of the Agrionine genera in particular is highly unsatisfactory, which is to be the more regretted in that these insects are no doubt capable of affording valuable clues for the elucidation of many problems of distribution. Carefully made collections from other parts of Borneo, from the Celebes, and Philippine Islands, especially from the mountains, no less than from other parts of the Malay Archipelago are much to be desired in order to amplify the researches of de Selys, Ris, Kruger, Martin, and others, who have devoted attention to the distribution of the Austro-Malayan Odonate fauna. I wish to offer my sincere thanks to Mr. Moulton for the time and trouble he has spent in making this collection and in putting it and much other valuable material in my hands for examination. I take the opportunity here also of recording my indebtedness to Dr. Ris and to M. Martin for the generous assistance they have so cordially extended to me at all times.

Literature. In addition to the volumes of the Catalogue of the " Collections zoologiques du Baron Edm. de Selys Longchamps " dealing with the Odonata, which have so far appeared, which Dr. Ris and M. Martin have compiled, the following papers of recent date have been consulted. For earlier papers dealing with the odonate fauna of the Malayan region reference should be made to the very full bibliography given by Krüger in his studies on the Odonata of Sumatra.

Krüger. Die Odonaten von Sumatra. Stett. entomol. Zeit. 1898, pp. 64-139, and pp. 267-331; 1899, pp. 324-338; 1902, pp. 58-193.

Ris. Extr. des Ann. Soc. Ent. de Belge LV. 1911, pp. 231-255 Libellen von Sintang, Borneo.

Williamson. Proc. U. S. Nat. Mus. XXXIII pp. 267-317, 1907. The dragonflies of Burma and Lower Siam.—II. Subfamilies Cordulegasterinae, Chlorogomphinae, and Gomphinae.



West, Newman lith.

GENITAL APPENDAGES OF BORNEAN ODONATA.

Fig. 1.—Lateral view of genital appendages of second abdominal segment of *Leptogomphus williamsoni* ♂.

Fig. 2.—Anal appendages of *Leptogomphus williamsoni* ♂ seen from the side.

Fig. 3.—Lateral view of terminal segments of abdomen of *Hylæothemis clementia*, Ris, ♀.

Fig. 4.—Lateral view of anal appendages of *A. remiger* ♂.

Fig. 5.—Lateral view of anal appendages of *Pseudagrion (?) dubium* ♂.

List of Species.

I. Anisoptera.

AESCHNIDAE.

AESCHNINAE.

Amphiaeschna grubaueri, Förster. 1 ♀ Madihit. 24.5.11.

Jagoria modiglianii, Selys. Mt. Selinguid, 4,800 ft. 31.5.11.

GOMPHINAE.

Leptogomphus williamsoni, sp. n. 1 ♂ Madihit, alt. 2,000 ft. 4.6.11.

LIBELLULIDAE.

LIBELLULINAE.

Hylaeothemis clementia, Ris. Limbang.

Neurothemis fluctuans, Fabr. 1 ♂ 2 ♀ Limbang. 20.6.11.

Lyriothemis cleis, Brauer. Limbang. 20.6.11.

Orthetrum sabina, Drury. 1 ♂ Limbang. 20.6.11.

Orthetrum chrysis, Selys. 1 ♂ 1 ♀ Madihit. 21.5.11.

Orthetrum clelia, Selys. 1 ♂ Limbang. 11.5.11.

II. Zygoptera.

AGRIONIDAE.

CALOPTERYGINAE.

Matronoides cyaneipennis, Förster. 6 ♂ ♂ stream below Mt Selinguid and on stream below Mt. Batu Lawi, 3,800 ft. 30.5.11.

Euphaea, sp. 1 ♀ Limbang. 16.5.11.

Rhinocypha, sp. undescribed. 1 ♂ Mt. Selinguid, 4,800 ft. 31.5.11.

Devadetta argyroides, Selys. 1 ♂ River below Selinguid. 31.5.11.

AGRIONINAE.

Trichocnemis nemoricola, sp. n. 2 ♂. 27.5.11.

Amphicnemis remiger, sp. n. 11.5.11.

Teinobasis rajah, sp. n. Limbang. 22.611.

Pseudagrion (?) dubium, sp. n. 27.5.11.

Disparoneura moultoni, sp. n. 1 ♂. 11.5.11.

Notes on the Specimens and Description of new Species.

Amphiaeschna grubaueri, Förster. 1 ♀. 24.5.11.

A large and handsome species, new to the Bornean fauna. Appears to differ from *A. perampla,* Martin, which has been recorded from Borneo in its slightly larger size, and very narrow fork to Rs. Hind-wing in *A. perampla* ♀ 62 mm. long, in *A. grubaueri* ♀ (present specimen) 70 mm. long. Also in *A. grubaueri* ♀ the outer half of each wing has a yellow tinge in addition to the dark brown mark at the base, whilst the thorax is entirely rich brown anteriorly with a pair of yellow stripes on either side.

Jagoria modiglianii, Selys. 1 ♀ Mt. Selinguid, 4,800 ft. 31.5.11.
Length of abdomen 45 mm. Length of hind-wing 44 mm.

Approximates in size to Needham's *Dolaeschna elacatura* which is regarded by Dr. Ris as synonymous with the present species, as is also the smaller *Jagoria poeciloptera,* Karsch, or at least specimens from Singapore referred to that species.

Gomphinae.

Leptogomphus williamsoni, sp. n. ♂ adult. Locality Madihit, alt. 2,000 ft.

Length of abdomen with appendages 34 mm., hind-wing 25 mm.

A *single row of cells* in the anal area of the fore-wing. A basal sub-costal nerve of the second series present in all four wings. Dorsal thoracic stripe isolated, yellow ante-humeral stripe present, complete. A pair of small lateral basal yellow spots on abdominal segments 3-7. Segments 8-10 black, with an oval yellow dorsal spot on 10. Legs black. 15 ante-nodals and 10 post-nodals on fore-wing. Upper lip black with yellow base; genae yellow; vertex brown, the rest of the upper surface of the head black.

Prothorax black with lateral yellow spot.

Thorax black above, variegated with yellow; yellow below.

Mesothoracic half-collar wedge-shaped, the base of the wedge lying close against the middle line, the dorsal stripe narrow; ante-humeral stripe continuous with the yellow of the undersurface. Anal appendages very dark brown. Upper pair laterally compressed, about equal in length to segment 10, ending in a sharp, upturned point, the outer border with 4 or 5 strong serrations, the most proximal of these being the largest, and forming a projecting tooth against which the termination of the lower appendage bites. Lower appendage equal in length to upper pair, its distal half forked so that it ends in two widely divaricated spurs. (See fig. 2).

This new species approaches *Microgomphus* in possessing but a single row of cells in the anal area of the fore-wing. If the species is correctly referred to *Leptogomphus,*—and in so referring it I have the support of Dr. Ris, a slight alteration becomes necessary in the definition of the genus proposed by Williamson, namely that *the anal field of the front wing may consist of a single row, or of a maximum of two rows of cells.*

Hylaeothemis clementia, Ris. 1 ♀ Limbang.

Described from a single male in the Selys collection. Length of abdomen ♀ 23 mm. ♂ 23 mm., hind-wing ♀ 27 mm. ♂ 25 mm.

In coloration the female is practically identical with the male described by Dr. Ris. The eighth abdominal segment has well developed lateral foliations. The ventral plate of this segment ends at the level of the end of the segment in a pair of blunt almost square projections one on either side of the middle line, with a median notch between them. The ventral plate of the ninth segment has posteriorly a slight median rounded projection which at its free margin is fringed with rather stout hairs some of which project downwards (see fig. 3). Except that segment 8 has well marked lateral expansions the arrangement of the terminal segments of the abdomen resembles very closely that figured by Dr. Ris for the African *Allorhizucha klingi,* Karsch. Ris remarks that the structure of the genital armature of the male *Hylaeothemis* allies it to the group of genera to which *Allorhizucha klingi* belongs. Mr. Moulton's specimen has only two nerves on the basal space of both hind wings and the supratriangular space of the right fore-wing is uncrossed.

CALOPTERYGINAE.

Matronoides cyaneipennis, Förster.

Six males of this magnificent insect were obtained by Mr. Moulton from a mountain torrent which flows between Mt. Selinguid and Batu Lawi at an altitude of about 3,800 ft. This is a new locality for the species hitherto recorded only I believe from Mt. Kina Balu. The single specimen belonging to the genus *Euphaea* is a female, and at present it is unfortunately impossible to determine the species of isolated females of that genus.

The *Rhinocypha* belongs to a species of which the description has not yet been published. Mr. Martin however, has already named and described specimens belonging to the same species, in his volume on the *Calopteryginae* of the de Selys collection, which is now in the press and shortly to be published. Accordingly I pass it over here.

AGRIONINAE.

Coeliccia (*Trichocnemis*) *nemoricola,* sp. n. 2 ♂ ♂. 27.5.11.

♂. Length of abdomen 50 mm. Length of hind-wing 32 mm.

Median sector rises from nodal vein. 19 post-nodal nerves in fore-wing. Pterostigma black. Wings iridescent.

Head. Lower lip whitish-brown, upper surfaces entirely velvety-black.

Prothorax white below, above black with indications of a paler mark on either side.

Thorax white below, above and on the sides velvety black. There is an indication of a narrow antehumeral stripe on either side, of a dull black purple colour, and of a band of similar colour at the base of the side of the thorax. During life it is possible that these bands are of a brighter colour.

Abdomen entirely dull black (in one specimen there is some trace of lighter colour on the dorsal side of segment 10) except for the sides and under surface of the first and second segments which are brownish-white.

Legs, anterior surface of femora and tibias white, dorsal surfaces black, spines and tarsi black.

Anal appendages black, very similar in shape and proportions to those of C. octogesima. Upper pair $\frac{4}{5}$ as long as lower pair, rather stout, finger-shaped, flattened from side to side, with a small inwardly and downwardly directed tooth at about the middle of their length on the under side. Lower pair slender cylindrical, ending in a sickle-like curve, their extremities turned almost directly inwards to meet each other.

This species rivals in size *C. orang* Förster from the Malay Peninsula, and with it stands as the largest described species of the genus. It is further characterized by its very sombre coloration, as well as by the shape of the anal appendages.

Amphicnemis remiger, n. sp. 1 ♂ Kuala Madalam, Limbang River, Sarawak. 11.5.11.

Length of abdomen 34 mm. Length of hind-wing 19 mm.

Upper lip metallic bronze-green, the whole of the upper surface of the head greenish-black.

Prothorax metallic bronze-green above, pale yellow below. The posterior margin of the prothorax is produced on either side into a sharply projecting angle, but there is no median spine.

The thorax is metallic bronze-green above; this colour ends sharply immediately beyond the first lateral suture, where it is succeeded by the pale primrose yellow of the sides and under surface.

The abdomen has (as in other species) the dorsal surface of the first two segments of a metallic green colour. The remaining segments are dull brown above, paler beneath, the last four segments almost uniformly dull brownish black.

Legs primrose yellow, with a fine black ring at each articulation.

Anal appendages white (see fig. 4). Upper pair slender, ending in a disc so that they have rather a paddle-like shape. The shaft a little bowed with a small dorsal tooth at its middle. Lower pair rather shorter, slender, ending in an upturned point. (See fig. I).

Wings with 11 post-nodal nerves on the anterior pair.

Pterostigmata grey with whitish margin, the upper border decidedly shorter than the lower.

Perhaps nearest to *A. furcata,* Brauer, but decidedly smaller, with short lateral angles to the prothorax. Those of *A. furcata* are described as long, thin, cylindrical points.

Teinobasis rajah, sp. n. 2 ♂ ♂ Limbang. 22.6.11.

Length of abdomen 33 mm. Length of hind-wing 20 mm.

Pterostigma gray with pale margin, oblong and a little oblique; not quite covering one cell. 13 post-cubital nervules.

Upper side of quadrilateral having in the fore-wing two-fifths, and in the hind-wing three-fifths of the length of the lower side. Wings petiolated to the basal post-costal nerve, which lies almost at the level of the second antenodal. Colour orange-red and bronze-green above, whitish yellow below.

Head:—Lower lip, whitish-yellow, with long lobes. Upper lip, orange with black lateral border. The rest of the head dark bronze-green, with a narrow orange line across the nasus.

Prothorax:—Orange-red above, paler below.

Thorax:—Rich orange-red above, paler at the sides and below, with a fine bronze-green median longitudinal stripe.

Abdomen:—Segments 1-7 dull brown, 8-10 orange red. The three last segments a little stouter than the first seven, which are very slender.

Legs yellow, with brownish-black spines.

Anal appendages reddish-brown; darker at their extremities.

Upper pair very small, cylindrical, curved inwards at their extremities, with a small inwardly directed spur.

Lower pair of the same length, flattened from side to side, directed backwards and upwards; ending in a fine black point.

Pseudagrion (?) *dubium,* sp. n. 1 ♂. 27.5.11.

Length of abdomen 40 mm. Length of hind-wing 27.5 mm.

Wings petiolated to basal post-costal nerve, which lies at the commencement of the distal third of its distance between the first and second antenodal nerve. Arculus at the level of the second antenodal nerve.

Quadrilateral rather long, its upper side in the fore-wing two-thirds, and in the hind-wing three-quarters of the length of its lower side. Median sector rising beyond level of vein descending from nodus.

Pterostigma small, black, oblique.

Head, small. Lower lip white. Upper surface entirely black (there is a faint indication in the single specimen of a pair of post-ocular marks which appear to be very slight depressions with a bright light reflex; possibly due to post-mortem shrinkage).

Prothorax and *thorax* rich blackish-brown above, pale below. Laterally the thorax is paler brown, with an obscure blue-grey humeral stripe.

Abdomen slender, entirely brownish-black, with indications of paler marking on the dorsum of segments 8 to 9.

Legs yellow, with black articulations and a brown longitudinal stripe on the dorsal side of the femora.

Anal appendages brownish black, the upper pair conical, directed backwards, the lower pair running backwards and upwards, narrower and more pointed than upper pair, both pairs shorter than segment 10 (see fig. 5).

Dr. Ris has examined the specimen and has kindly furnished me with the following notes on it. "It is not a *Teinobasis* as it "has toothed claws and simple superior appendages; also evidence "of post-ocular spots. The general form, the position of M 3 and "RS. as well as the character of the superior appendages forbid its "being referred to *Pseudagrion* without some stress to the definition of the genus. In the absence of the ♀ the position of the "specimen must remain doubtful. I have nothing to compare "exactly with it, not even *Pseudagrion magnanimum* from the "Aru Islands which also is not a *Pseudagrion*, but I think generically distinct from the present specimen."

Disparoneura moultoni, sp. n. 1 ♂. 11.5.11.

Length of abdomen 34 mm. Length of hind-wing 19 mm.

Head:—Upper lip pale yellow, with fine black margin; the rest of the upper surface of the head velvety black.

Prothorax.—Upper surface black, under side yellowish-white.

Thorax. Dorsal and lateral surfaces black, with a fine yellow lateral stripe, under surface yellowish-white .

Abdomen. Brownish-black, a yellow mark on either side of the second segment, and the under surface of segments 1 and 2 also yellow.

Legs. Brownish-black.

Anal appendages small, about equal in length to the 10th segment. Upper pair seen from above leaf shaped, pale yellow above, edged with brownish black. Each has a small projection inwards. Lower pair brownish-black, cylindrical, sharply curved inward at their extremities: about equal in length to upper pair.

Wings. Pterostigma brownish-black, very oblique, lying over one and one third cells. Basal post-costal nerve lying between the level of the costal antenodal nerve. No rudiment of lower sector of triangle. (Cu 2). 14 post-costal nerves in fore-wing.

Upper sector of quadrilateral reaching to the first cross nerve after the quadrilateral in the fore-wing and to the second in the hind-wing.

This species belongs to the group which includes species referred by Selys to the genus *Caconeura* (*Alloneura*) viz: *C. dor-*

salis, gracillima, lansbergi, and *hyperythra,* as well as *C. dohrni* of Kruger.

Dr. Ris has most courteously permitted me to use a suggestion of his as to the definition of the genera *Disparoneura* and *Caconeura* (*Alloneura*) which I have followed in referring the species described above to *Disparoneura,* involving a change in the definition of the genus which will necessitate the transfer of all the species mentioned above from *Caconeura* to *Disparoneura.* He proposes to distinguish the genera as follows:—

(a) Basal post-costal nerve placed in a level with the first antenodal or even proximal to it; no rudiment of Cu 2 (lower sector of triangle) = *Caconeura.*

(b) Basal post-costal nerve placed at a level between antenodal 1 and 2, mostly about half-way; rudiment of Cu 2 present or absent = *Disparoneura.*

He points out that the rudiment of Cu 2 seems to be individually and even asymmetrically variable in some species.

Consequently I refer the present species to *Disparoneura* in the neighbourhood of the group of species named above.

APPENDIX IX.

Some words in use among the natives met on the journey to Batu Lawi.

By J. C. Moulton.

(T = Tabun, M = Murut, K = Kalabit).

above	t'por (T).
accustomed	mălā (T), bakali (M).
anger, wrath	dălōh (T), musa (M).
animal	po'ong (T. M).
ask, enquire	ngītūn (T. M).
back	ratŭd (T).
banana	baung (M).
bathe, to	diŏr (T. M. K).
be, to	inan (M), ian (T).
bear (animal)	bruang (T. M).
bite, to	ngetop (M. K).
blaze, flare up	ulohn apoi (K).
body	burur (T. M).
brave	machil (T. M).
bring forth a child	iananak (T).
broad, wide	mĕlār (M. K).
brother, elder	bŭkāt (T).
brother, younger	ĭīc (T).
bucket, bailer	sa'ok kalud (T).
buffalo	kerbau (T. M. K).
bundle	angglibūn (T).
buttons (of a coat)	tă ud baju (M. K).
buy	meli (T), blian (M).
cicada	tawar idang (T).
climb a tree	menud kayu (M).
clouds (high in sky)	bĕrāwan (K).
coat	baju (T), koiu (M).
cocoanut	bhutan (K).
comb, rake	mudud (T. M. K).
come	finching (T), meching (K).
corpse	bōtong (T. M).
cough	masūd (T).
cunning	akal (T. M. K).
day	chor (T. M. K).
day after to-morrow	sĕrĭāk (M. K).
daylight	mitsang chor (T. M. K).
dead	mateh (T. M).
debt	mangŭd (M), bălōh (K).

depilatory forceps	opit (T).
descend (from house)	n'murud (T), t'murun (M).
descend (from hill)	musul (T. M).
divide, shade	mubfat (T. M).
do not (prohibitive)	yān (M).
dog	ukor (T).
drink	mīrūb (K).
drop, fall, be shed,	p'rogan (M), rurogue (K).
dry or fair weather	rĭkan (M), rīkān (K).
ear	lalid (T. M).
earth, soil, land	tanah (T. M).
eat	kumān (T. M. K).
egg	terurr (T. M).
elbow	sikoh (T. M. K).
far	mador (T).
fear, afraid	ta'aūt (T), metaut (M).
fell, jungle, to	nibfung lemidik (T), nibfung temarak, nibfung ribfa (M).
fine	halus (K).
fire	apui (T. M).
fish	lawid (T. M).
flood, fresh in river	riab'fa (T. M).
fly, a	lalad (M. K).
fly, to	t'mulud (T. M).
forget	k'lupan (M. K).
former, long time, old	lalit (M), dadan (K).
fowl	la'al (T. M).
fruit	bua (T. M).
give	mĕray, bray (T).
go down river,	tubfa (M. K).
gold	ămās (T. M).
good, all right	moi (T), dor (M), gin (L. P).
grasshopper	kataw (T. M).
hand	tichu (T. M).
hatred	getā (T. M).
head	uloh (M. K).
heavy	tōŏh (T).
here, come	metongi (M).
hole	lobang (M. K).
how	mepakor (T), kudangpa (M).
how many, how much	tuda (T. M).
I, me	oŭoūi (T), weh (M).
inclined, aslant	t'bēring (T).
jump, dive	opun (M).
jungle	b'mpūlōng (M. K).
key, lock	kunchi (M. K).
kill	ngatay (T. M).
knee	uloh alub (M. K).
knife (small)	ĭūh (M. K).

know, meaning, understand	k'li (M. K. T).
know, do not know	am k'li (T).
lansat (fruit)	lengat (M. K).
lathes for flooring	lăsāt (M. K).
laugh	bulan (T), t'diru (M).
leap down	murun (T).
leech (land)	lematah (M. K).
leg	ko'ud (T), kokod (M).
leg, from knee to ankle	bĕti (T).
lid, cover	tutob (T), kub (M).
light, clear	mitsang (T), mits-angtsaw (M).
lips	bibir (T. M).
loose	'raru (M. K).
love	bălū burōrr
man (Malay 'orang')	da' (T), ida (K).
man, where is he going?	mengi d'na? (M).
measure	nari (T. M. K).
meet	papu (T. M).
mist	la'pūt (M. K).
money, hire	belanjar (T).
monkey (brok, *Macacus nemestrinus*)	bechok (T).
monkey (kra, *M. cynomolgus*)	kalabut (T).
moon	bulan (T. M).
more	bĕru (M. K).
mosquito	ritāk (M), namok (K).
mosquito large	tukong (M).
mosquito curtain	kelaboh (T), tirun (M).
mother	ina (T), tinan (M).
mud, slime	tanah liar (M. K).
naked	lubfa (T. M).
near	munung (T. M).
new, recent	baru (T), b'ru (M).
no, not	la (T), nam (M. K).
no, is not	la ian (T), nam inan (M).
obtain, acquire	kălăp (T).
open	oukab (T. M).
other, different	lumbukan (M. K).
picture	ărĭd (M. K).
pig (domestic)	brāk (T. M).
pig (wild)	ba'a (T).
pillow	unan (T), legar (M).
pleasant, nice	māin (M. K).
porcupine	t'rotong (M. K).
pull, drag	ngĕruīd (T. M).
put, place	ulu (T), ngūmūg (M).
race, kind, species	bancha (T), limbawang (M).
rain	mudan (M. K).
raise, lift	gĕnūch (T), niding (M).

remember	ngĕrōuï (T), k'li (K).
remnant, trace	oban (T).
resist, oppose, combat	lawan (M. K).
return a thing, turn over	lubad (T), lemubad (M).
return, retaliate	unūia (T), unwa (M).
rice (boiled)	obah (M. K).
rice (uncooked)	brah (T. M).
rise, ascend	t'makŭd (M. K).
river	arōrr (T. M. K).
roof, leaf or wood tiles of	apaw (T).
root	war (T. M).
rope, string	lupar (T. M).
round (like a coin, round and flat)	liborr (T. M).
round (expressing circumference, *e.g.* of a bamboo)	teburun (T. M).
round about, all round	s'libong (M. K).
run away	burōr (M. K).
scales (of fish, tortoise)	era (T. M. K).
scrape, to, rub	gugut (M. K), sugi (T).
sea	lau'ūd (M. K).
see	mawan (M. K).
seed	ilong (T. M).
shade, shelter	lūngōng (M. K).
sharp	tadan (T. M).
shoulder	tudong (T. M).
shoot, to	madil (T. M).
sing	mumuh (M. K).
sky	langit (T. M. K).
sleep, to	rudap (T. M).
smell	maba' (T. M).
smoke	rabfun (T).
soft, flexible	liar (M. K).
something	la'kub (T).
sound	uni (T. M).
spear	băkōu (T), gaman (M).
spider	k'lawa (M. K).
spit, to	saliva, lēcha (M. K).
squeeze, press	m'r'gam (T), misak (M).
star	bituan (T. M).
stone	batu (T. M).
stop	udcho (T. M).
straight, direct	cirie (M), topŭd (K).
swallow, to	krau'arr (T).
swift, fleet	māuĕrr (M. K).
swim	lemangoi (T), lemangwi (M).
take, accept, fetch	ăpān (T).
throw away	n'la (T. M).
thus, in this manner	okonī (T).

tobacco	sigup (T. M).
to-morrow	nubfar (T. M).
tooth	lipan (M. K).
trouble, care	tusah, susah (T. M. K).
true	tŭoh (T).
trunk (of tree)	batang (T. M).
under	liang (T).
untrue	balih (T. M).
wages	t'bfar (T).
wait, delay	na'it (M. K).
walk, go	nalan (K).
walk along the ridge of a mountain (or follow the direction of a mountain)	nador tŏ'ŏr (M), emphasized by repeating the last word thus; nador tŏ'ŏr tŏ'ŏr.
weep, shed tears	nangi (T. M).
what	mïn (T).
when	idang (T. M).
which (relative) Malay = yang	none in T. M.
whistle	nisiuih (T), nisiok (M. K).
who? which?	iaīna (T), idaïna (M. K).
widow, widower	nechōng (T), nechung (M).
wind	bărĭū (T), bui (M).
wound	maurah (M. K).
you	kăm (T), 'kor (M).

(you go first, malan 'kor pŏūn).

NUMERALS IN TABUN AND MURUT.

1	sa	5	limah	9	se wa
2	dua	6	'nam	10	puloh
3	telar	7	tudoh	11	puloh sa
4	pat	8	aloh	100	ma'ratu
		1000	ma'ribu.		

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